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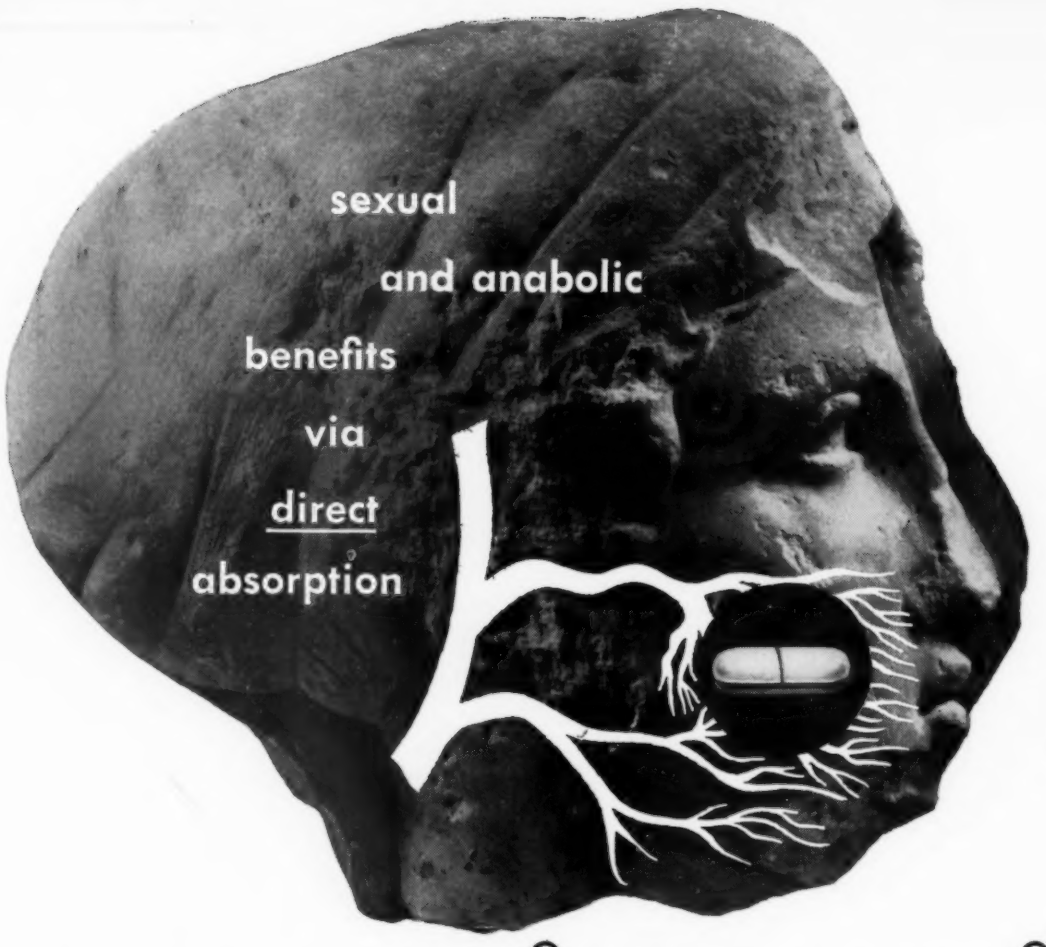

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THE CHANGING NUMBER AND DISTRIBUTION OF THE AGED POPULATION

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Increasing and deserved recognition is being given to the fact that aged persons now are of great importance, relatively and absolutely, in the population of the United States. The aging of our population—that is, the increase in the number and proportion of those aged 65 and over—has come to the attention of those in all fields of knowledge and most all walks of life.

This awareness began shortly after the 1940 census revealed a total of 9,019,314 persons, or 6.8 per cent of the population, aged 65 and over. It received great impetus when the results of the 1950 census became available, showing that the population considered as aged for statistical purposes had increased to 12,269,637 and that 8.1 per cent of the inhabitants of this country had passed their sixty-fifth birthdays. Merely by projecting this trend a few decades into the future, it has been possible for some to create a widespread belief that very shortly we may become a nation of elderly persons. It is, however, relatively easy to demonstrate that such projections are unreliable and that new factors, particularly the spectacular rise in the birth rate since 1936, make the outlook considerably different than that often presupposed. It is also important to call attention to some other aspects of the subject, such as the changing distribution of the aged population and its etiologic factors.

THE INCREASING NUMBER AND PROPORTION OF THE AGED

The census of 1900 reported a total of 3,080,498 persons aged 65 and over in the United States. At that time the total number of inhabitants was only 75,994,575, so that those in the ages commonly designated for statistical purposes as *old* constituted only 4.1 per cent of the population. For the next thirty years the increase in elderly persons slightly more than kept pace with the growth of population in general; but even so, the 1930 census enumerated only 6,633,805 persons, or 5.4 per cent of the population, aged 65 and over. However, had it not been for the small baby crop during the Civil War years, a factor which sharply reduced the number of persons aged 65–69 in 1930, the figure and the percentage would have been considerably larger. As events transpired, though, it was not

until after 1930 that the rise in the absolute and relative importance of the aged became spectacular. Then the combined effects of the post-Civil War rise in the birth rate, a fairly significant rise in the expectation of life at age 65, the precipitous drop in the birth rate from 1900 to 1936, and the gradual aging of millions of immigrants who flocked to this country from Europe just prior to the first world war, led to the situation which presently is receiving widespread attention. The magnitude of the recent change is clearly revealed by the following facts. Between 1900 and 1950 the number of persons aged 65 and over increased by 297 per cent, whereas the population a as whole gained by only 98 per cent. When the century opened only 1 person in 24 was in the aged category, whereas at mid-century 1 person out of every 12 had passed the sixty-fifth birthday.

Factors involved in the aging of the population

Before presenting the outlook for the future with respect to the aging of the population, it is well to consider briefly the factors which have caused the changes in the immediate past. Fortunately, in this, as in all other matters pertaining to population numbers and distribution, only three factors can have a direct bearing. These are births, deaths, and migrations; any other factors must exert their effects by influencing one or more of these. Consider first the way in which variations in these three elements are the direct cause of the absolute increase in the numbers of the aged, since these variations are somewhat different from those which produced the rapid rise in the percentage of old persons in the population. The effects of these factors can be most readily identified and measured if attention is concentrated upon the age group 65–74, the one which contains well over two thirds of all those who have passed the sixty-fifth birthday. In 1940 the number of persons reported as falling in this age group was 6,376,189. By 1950 the corresponding figure was 8,414,885; there had been an increase of 2,038,696. During the same decade the number of foreign-born white persons aged 65–74 increased from 1,414,687 to 1,856,335, or by 441,648. Therefore 21.6 per cent of the gain in this all-important portion of the aged population must be attributed to immigration. Were it possible to determine the change in the foreign-born non-white population, this proportion would probably be increased slightly.

Death, as reflected in the increased expectation of life at age 65, is the second factor to be reckoned with in an analysis of the aging of the population. Roughly, its influence may be measured in the following manner. Of the 8,396,898 persons aged 55–64 in 1930, 6,376,189 were accounted for by the 1940 census, in which they figured as those aged 65–74. Therefore the loss as they passed through the decade was 2,020,709, or 24.065 per cent. Likewise those aged 55–64 in 1940 totaled 10,572,205, of whom 8,414,885 were living and aged 65–74 at the time of the 1950 census. In this case the loss of 2,157,320 was only 20.406 per cent. The difference in these percentages (carried to five places for purposes of computation) of 3.65936 may be considered as the result of the lowered death rate of the group, or improved life expectation, during the ten years. Applying this percentage to the 10,572,205 persons of these ages in 1940 gives 386,750 as the num-

ber of those 65–74 years old in 1950 who would not have been alive had mortality rates remained at their 1940 levels. The fact that they alone make up 19.0 per cent of all those of the stated ages seems highly significant. It seems to indicate that about 1 in 5 of persons in the age group 65–74, and probably of all the aged persons now living, owes his continued existence to improvements in the expectation of life since 1940.

Finally, the population aged 65–74 increased between 1940 and 1950 because the number of births in the decade 1875–1884 was considerably larger than that in the decade 1865–1874. Accurate birth statistics are, of course, not available for those periods; but the necessary approximations, after the highly significant infant and child mortality rates had time to exert most of their influences, may be had by comparing the number in the age group 5–14 in the 1890 census with that in the 1880 enumeration. After eliminating the foreign-born whites, who undoubtedly made up almost all of the foreign born, there remain totals of 13,952,777 and 11,833,710 persons aged 5–14 in 1890 and 1880, respectively. Therefore during this decade the size of the generation in question may be said to have increased by 2,119,067 or 17.9072 per cent. Applying this percentage to the figure of 6,376,189 (the population aged 65–74 in 1940) should give the number of those of corresponding age in 1950 accounted for by the increased size of the generation due to changes in the number of births between 1865–1874 and 1875–1884. The resulting figure is 1,141,797, or 56.1 per cent of the increase of 2,038,696 in the age group under consideration.

When combined, these three factors account for all but 3.3 per cent of the observed increase in the population aged 65–74—the lion's share of the aged population—during the decade 1940 to 1950. This margin of error certainly is far less than that usually encountered in bio-social equations and should give one a considerable degree of confidence in the reliability of the results. These data indicate that the increase in the population aged 65–74, and probably the entire aged population, between 1940 and 1950 is due to three factors to the following degrees: the increased size of the generation caused by the larger number of births in the decade 1875–1884 than in the decade 1865–1874—57 per cent; immigration—23 per cent; and lower mortality rates since 1940 among those aged 55 and over—20 per cent.

The etiologic factors in the relative increase in the importance of the aged population are much more difficult to measure. They include the increased expectation of life and the changing importance of the immigrant population; but the variations in the number of babies born decade after decade are by far the most important, and the tremendous amount of arithmetic required to determine rather precisely the influence of this and the other factors is still to be performed. In general, one can be sure that the precipitous decline in the birth rate in the United States between 1875 and 1936 had much to do with the percentages of the population in the older age groups in 1940 and 1950. It likewise is certain that the sharp increase in the birth rate since 1936, and especially since the close of the second world war, will hold the proportion of old people in 1960 considerably below that which otherwise would have been the case. But no one has made

the computations needed to determine the absolute and relative importance of the several factors in the past; and unless one is able to predict the number of births in the years to come (and this the author is unable to do) it is impossible to project their effects into the future.

The outlook for the future

An analysis of the factors involved gives every reason to expect a continued sharp rise in the number and proportion of aged persons in the immediate future. Specifically, the recovery of the birth rate has neither been great enough nor sustained enough to offset fully its sharp and long-continued decline during the closing decades of the nineteenth century and the first thirty-five years of the twentieth. If no new and catastrophic forces, such as a war with atomic weapons, enter to change the prospect radically, the writer estimates that there should be slightly more than 16,000,000 persons aged 65 and over in this country at the time of the 1960 census, and about 19,000,000 by 1970. Any spectacular medical developments that may further reduce the mortality rates among those in the advanced ages would make for even larger numbers than these. Unless there are such discoveries, however, the number of aged persons should increase until 1990, when the low birth rates of the 1920's and 1930's will be reflected in a sharp drop in the population aged 65 and over enumerated in the year 2,000. Thereafter, another rapid increase should begin.

The relative importance of the aged also seems certain to increase during the next few decades, probably to about 9.3 per cent in 1960 and 9.8 in 1970. If the birth rate drops sharply before these dates, the percentages may well be somewhat higher, whereas any additional large reductions in the infant mortality rates and the death rates of those of less than 65 years of age would tend to reduce them to some extent. As indicated previously, the writer is not able to predict future variations in the birth rates.

THE CHANGING DISTRIBUTION OF THE AGED

Three aspects of the changing distribution of the aged are explored briefly in this section: 1) tendencies or trends in the distribution of the aged population amoung the various states; 2) the changes that are under way in the rural-urban distribution of those of advanced ages, including the city-to-city variations; and 3) the role of migration as a factor in the changing distribution of those at or near retirement ages.

Changes in the geographic distribution of the aged

Some states rather consistently show large proportions of those 65 and over in their populations, whereas others decade after decade have less than their pro rata shares of the nation's elderly people. This is evident from an examination of the data in Tables 1 and 2. The first of these shows the number of persons of 65 and over in each of the states and the proportion they constituted of the total population for the years 1940 and 1950. The second contains indexes of the extent to which each state had more or less than its pro rata share of the nation's aged

TABLE 1

*Population Aged 65 and Over by Divisions and States, 1940 and 1950**

Division and State	Population 65 and Over		Per Cent 65 and Over	
	1940	1950	1940	1950
United States	9,019,314	12,269,637	6.8	8.1
New England	715,349	906,567	8.5	9.7
Maine	80,325	93,562	9.5	10.2
New Hampshire	48,720	57,793	9.9	10.8
Vermont	34,492	39,534	9.6	10.5
Massachusetts	368,964	468,436	8.5	10.0
Rhode Island	54,284	70,418	7.6	8.9
Connecticut	128,554	176,824	7.5	8.8
Middle Atlantic	1,878,645	2,539,271	6.8	8.4
New York	922,356	1,258,457	6.8	8.5
New Jersey	278,821	393,989	6.7	8.1
Pennsylvania	677,468	886,825	6.8	8.4
East North Central	1,968,764	2,595,869	7.4	8.5
Ohio	539,729	708,975	7.8	8.9
Indiana	288,036	361,026	8.4	9.2
Illinois	567,963	754,310	7.2	8.7
Michigan	330,854	461,650	6.3	7.2
Wisconsin	242,182	309,917	7.7	9.0
West North Central	1,112,728	1,377,605	8.2	9.8
Minnesota	212,618	269,130	7.6	9.0
Iowa	227,767	272,998	9.0	10.4
Missouri	325,745	407,388	8.6	10.3
North Dakota	39,390	48,196	6.1	7.8
South Dakota	44,440	55,296	6.9	8.5
Nebraska	105,632	130,379	8.0	9.8
Kansas	157,136	194,218	8.7	10.2
South Atlantic	968,991	1,397,002	5.4	6.6
Delaware	20,566	26,320	7.7	8.3
Maryland	123,516	163,514	6.8	7.0
District of Columbia	41,206	56,687	6.2	7.1
Virginia	154,944	214,524	5.8	6.5
West Virginia	100,974	138,526	5.3	6.9
North Carolina	156,540	225,297	4.4	5.5
South Carolina	81,314	115,005	4.3	5.4
Georgia	158,714	219,655	5.1	6.4
Florida	131,217	237,474	6.9	8.6
East South Central	612,689	821,739	5.7	7.2
Kentucky	189,284	235,243	6.7	8.0
Tennessee	171,778	234,884	5.9	7.1
Alabama	136,209	198,648	4.8	6.5
Mississippi	115,418	152,864	5.3	7.0
West South Central	718,692	1,033,186	5.5	7.1
Arkansas	107,260	148,995	5.5	7.8
Louisiana	119,003	176,849	5.0	6.6
Oklahoma	144,934	193,922	6.2	8.7
Texas	347,495	513,420	5.4	6.7

TABLE 1—*Continued*

Division and State	Population 65 and Over		Per Cent 65 and Over	
	1940	1950	1940	1950
Mountain	251,161	358,967	6.1	7.1
Montana	36,257	50,864	6.5	8.6
Idaho	31,700	43,537	6.0	7.4
Wyoming	12,558	18,265	5.0	6.3
Colorado	86,438	115,592	7.7	8.7
New Mexico	23,284	33,064	4.4	4.9
Arizona	23,909	44,241	4.8	5.9
Utah	30,215	42,418	5.5	6.2
Nevada	6,800	10,986	6.2	6.9
Pacific	792,295	1,239,431	8.1	8.6
Washington	144,320	211,405	8.3	8.9
Oregon	92,728	133,021	8.5	8.7
California	555,247	895,005	8.0	8.5

* Source: Compiled from United States Bureau of the Census, *United States Census of Population, 1950*, Vol. II: Characteristics of the Population, Part 1 (Washington, D. C., Government Printing Office, 1953).

population in 1930, 1940, and 1950. In the calculation of these indexes a state which had exactly the same proportion of the nation's population as it had of those in the United States who were aged 65 or over, scored 100; whereas another, such as Massachusetts, which in 1950 contained 3.112 per cent of the national population and 3.818 per cent of those who had passed the sixty-fifth birthday, scored 123 for that year.

It should be observed in passing that present concentrations of the aged are greatest in some of the New England States (New Hampshire, Vermont, Maine and Massachusetts) and in the Midwest (Iowa, Missouri, Kansas and Nebraska). The lowest proportions are in the southeastern states, except Florida, and in the Southwest, with the indexes for New Mexico, South Carolina, North Carolina, Arizona, Utah and Georgia being lowest of all.

As mentioned previously, there is a significant tendency for the aged population to be concentrated in certain states decade after decade, although there also are some striking exceptions to the rule. States in which there have been high proportions of the aged from 1930 to 1950 include New Hampshire, Vermont, Maine, Iowa and Kansas. However, in the list of the first eight in this respect Oregon, Indiana and Delaware figured in 1930, whereas Missouri, Massachusetts and Nebraska had taken their places by 1950. The states having the lowest proportions of the aged included South Carolina, North Carolina and Arizona in 1930 as well as 1950, but to complete the list of the five in which old persons were of least relative importance, Louisiana and Alabama which figured in 1930 had been replaced by New Mexico and Utah by 1950.

Probably the most significant change that may be determined from the data in Tables 1 and 2 is the tendency towards a more equitable distribution of the elderly population among the states. Thus in twenty-nine states the indexes

TABLE 2

*Indexes Showing the Extent to Which Each Geographic Division and State Had Its Pro Rata Share of the Population Aged 65 and Over in 1930, 1940, and 1950**

Geographic Division or State	Census Year		
	1930	1940	1950
New England	124	125	120
Maine	157	140	126
New Hampshire	165	146	133
Vermont	161	141	130
Massachusetts	120	125	123
Rhode Island	109	112	110
Connecticut	107	110	109
Middle Atlantic	96	100	104
New York	98	100	105
New Jersey	94	99	100
Pennsylvania	98	100	104
East North Central	111	109	105
Ohio	117	115	110
Indiana	133	126	114
Illinois	102	106	107
Michigan	98	93	89
Wisconsin	120	113	111
West North Central	122	121	121
Minnesota	119	112	111
Iowa	141	132	128
Missouri	124	127	127
North Dakota	82	90	96
South Dakota	98	102	105
Nebraska	119	118	121
Kansas	126	128	126
South Atlantic	82	79	82
Delaware	132	113	103
Maryland	106	100	86
District of Columbia	106	91	88
Virginia	87	85	80
West Virginia	78	78	85
North Carolina	69	65	68
South Carolina	63	63	67
Georgia	74	75	79
Florida	89	102	106
East South Central	83	84	89
Kentucky	100	99	99
Tennessee	85	87	88
Alabama	70	71	80
Mississippi	72	78	86
West South Central	74	81	88
Arkansas	74	81	96
Louisiana	67	74	82
Oklahoma	76	91	107
Texas	74	79	83

TABLE 2—*Continued*

Geographic Division or State	Census Year		
	1930	1940	1950
Mountain	90	90	88
Montana	93	96	106
Idaho	94	88	91
Wyoming	72	74	78
Colorado	111	113	107
New Mexico	72	65	61
Arizona	67	71	73
Utah	79	81	77
Nevada	96	91	85
Pacific	120	119	106
Washington	119	122	110
Oregon	133	125	107
California	119	118	105

* Indexes computed from data assembled from the various reports of the United States Bureau of the Census. If a geographic division or state had exactly the same proportion of the population aged sixty-five and over as it had of the total population of the United States, its index would be exactly 100. A figure of less than 100 indicates the extent to which the aged population is under-represented, and one of more than 100 indicates the extent to which it is over-represented in a given state or division.

shown in Table 2 were nearer the national average of 100 in 1950 than they were in 1930. In Kansas there was no change; and in the other eighteen states and the District of Columbia the 1950 score was more removed from the national mean than was that for 1930. Furthermore, the range of the scores was considerably reduced between 1930 and 1950, that between 133 in New Hampshire and 61 in New Mexico for 1950 being much less than that between 165 in New Hampshire and 63 in South Carolina for 1930. The greatest changes during the twenty years under consideration were the reductions in New Hampshire (32 points), Maine, Vermont, Delaware, Oregon, Maryland, Indiana, the District of Columbia, California and New Jersey (13 points), in the order named. On the other hand, the most substantial increases were in Oklahoma (31 points), Arkansas, Florida, Louisiana, North Dakota, Montana, Mississippi, Alabama and Texas (9 points), also in the order named.

This is not the place to enter into a detailed discussion of the absolute and relative importance of the factors which have resulted in the present distribution of the aged among the various states. Nevertheless it is well to have in mind that the patterns of causation are highly complex and that the situation in each state represents a specific balancing of forces. If one merely considers the migration factor, one state, for example, may now have a high proportion of the aged because of a boom at the opening of the century which attracted to it tens of thousands of young men and women, whereas another must attribute the high proportion of old people in its population largely to the immigrants who settled there just before the outbreak of the first world war. A state such as Montana

may be experiencing a rapid aging of its population primarily because the men and women who pioneered in its development during their youth are now reaching the advanced ages; whereas another, let us say Arkansas, should attribute the increasing percentage of the aged in its population largely to the fact that considerable numbers of its youth have been migrating to other states. In Oklahoma both of these factors have weighed heavily in the spectacular recent increase in the proportion of old persons in the population. Finally, such states as California and Florida have been receiving large numbers of elderly migrants from other sections of the country. These are only a few of the ways in which migration, itself only one of the three factors involved, has entered into the causal pattern; and variations in the birth rate and in mortality rates add immeasurably to the intricacy of the problems.

The changing rural-urban distribution

Before the first world war, old people in the cities of the United States were conspicuous by their absence. Our new cities were growing rapidly, almost exclusively because they were attracting millions of young men and women from the farms and villages of this country and immigrants in the prime of their lives from the European countries. Many of the migrants from the rural areas of the United States spent the productive years of life in the urban districts and then returned to their communities of origin; and substantial numbers of the immigrants, after working a couple of decades in the city, attained a life-long goal by moving to the farming districts and acquiring land of their own. As a result of this constant recruitment of the young and the steady loss of those who had passed their prime, American cities generally had far less than their pro rata shares of the elderly population.

After the close of the war, however, the importance of old people in the nation's cities began to change radically. In 1920 the urban population made up 51.2 per cent of the national population, but it contained only 47.4 per cent of those aged 65 and over in the United States. This was only 92.6 per cent of its fair proportionate share. Even this figure was greatly inflated by the inclusion in the urban category of hundreds of small towns which formed the nuclei of America's rural communities. At that time, these places, ranging from about 2,500 to 7,500 in population, were the real "old folks' homes" or retirement centers of our rapidly developing country. In them were found inordinately large proportions of farmers' widows, retired farmers and their wives, and those who had left the cities for quieter places in which to spend the declining years of their lives. Nevertheless, even with this large semi-rural segment included, as it was by the census criteria, in 1920 the aged were substantially under-represented in the total urban population. They made up particularly low percentages of the people in the nation's principal cities.

Between 1920 and 1930 began a substantial change in this respect. By this time large numbers of native Americans who were city-born and city-reared were attaining the more advanced ages. As they neared retirement few were inclined to leave the cities to which they had been accustomed from birth, for the farms,

villages or small towns. In addition, the "later" immigrants from Europe had been drawn much more largely from the cities than had the earlier ones; they were much less "land hungry" and far less prone to move to the country districts after spending fifteen or twenty years in the cities. As a result, and despite a continued heavy flow of young people to the cities from the nation's farms (particularly from the farms of the South), the percentages of old people in the urban population began to rise substantially. The census of 1930 showed that the urban population constituted 56.2 per cent of the total population and that it contained 53.1 per cent of those aged 65 and over. Thus it then had 94.5 per cent of its pro rata share of the nation's old people, a considerable increase over the figure for 1920.

During the next two decades the same trend continued and at a quickened pace. By 1940 the urban population had 56.5 per cent of the national population and 56.2 per cent of those 65 and over, or 99.5 per cent of its prop rata share of the elderly. Ten years later, at the time of the 1950 census, and using the same definition of urban as had been applied earlier (the "old" definition), the corresponding proportions and index were 59.0 per cent, 60.5 per cent, and 102.5 per cent, respectively. In just thirty years the situation in the United States changed from one in which old people were greatly under-represented in the urban population to one in which the nation's towns and cities had substantially more than their pro rata share of those who had passed the sixty-fifth birthday.

In our latest census, that of 1950, a new tabulation of demographic data by size of place was introduced, a feature which enables us to determine with relative ease the degree to which the elderly population is over-represented or under-represented in urban centers of various sizes. Using these materials, calculations have been made which indicate the following: the central cities of urbanized areas having more than 1,000,000 population had just 99 per cent of their pro rata share of the persons aged 65 and over in the United States; those in urbanized areas of from 250,000 to 1,000,000 inhabitants had 102 per cent; and the ones in remaining and smaller urbanized areas had 105 per cent. In the "fringe" portions of these urbanized areas the indexes were much lower, ranging from 94 in those appertaining to the greatest concentrations of population, to 80 in the built-up areas surrounding cities of less than 250,000 inhabitants. In population centers not included in what the census has designated as large urbanized areas, the indexes increase as the size of place decreases as follows: 25,000 or more, 104; 10,000–25,000, 109; 2,500–10,000, 114; 1,000–2,500, 127; and less than 1,000, 167.

At the present stage in the redistribution of the aged population of the United States some highly significant city-to-city variations are evident. No doubt these will become even more important in the future as the normal process of social differentiation proceeds, with the division of social labor and the specialization of various cities in particular functions becoming more and more evident. The 1950 data have been analyzed for cities of 100,000 or more and for the few additional places (Atlantic City; Charleston, South Carolina; Charleston, West Virginia; Columbia, South Carolina; Columbus, Georgia; Jackson, Mississippi;

Lawrence and Lowell, Massachussetts; Portland, Maine; and St. Petersburg, Florida) in which the urbanized area has more than 100,000 inhabitants although the central city itself is slightly smaller. The results indicate that St. Petersburg, Florida, which in 1950 had 260 per cent of its pro rata share of the nation's elderly population, stands in a class of its own in the extent to which a large and constantly replenished group of old people has assembled in a given locality. It is most closely rivaled in this respect by Pasadena, California, with a score of 207. Then follow, in the order named, Atlantic City (146), Long Beach (138), Spokane (137), Rochester (136), Portland in Oregon (136), Utica (135), Portland in Maine (131), Reading (131), Lawrence (128), Lowell (128), Worcester (128), Seattle (126), Tacoma (126), Albany (123), Cincinnati (123) and Duluth (123).

The city with the most marked scarcity of old persons is Corpus Christi, Texas, which has only 46 per cent of its pro rata share of the nation's elderly population. It is most closely rivaled in this respect by Charleston (South Carolina), Baton Rouge (Louisiana), Columbus (Georgia), and Charlotte (North Carolina), for which the indexes are 53, 54, 57, and 59, respectively. Other cities with far less than their proportionate numbers of those aged 65 and over are as follows: Houston (62), Gary (62), Norfolk (63), Jackson in Mississippi (65), Columbia in South Carolina (67), El Paso (68), Detroit (70), Charleston in West Virginia (70), Savannah (72), Mobile (72), Dallas (75) and Montgomery (75). Generally speaking the cities with extremely low proportions of the aged are those which have grown rapidly in the last decade or so.

The nation's greatest cities deserve special attention because of the large numbers of elderly persons involved. New York, our largest city, had in 1950 only 96 per cent of its pro rata share of the old people in the nation, and the corresponding index for Chicago was only 94. Philadelphia, third in size, had a score of 101. Los Angeles, fourth in size and growing remarkably, has attracted so many oldsters along with the hundreds of thousands of those in the other age groups that it has a score of 119. This represents a tremendous concentration of the elderly in a limited area. On the other hand, Detroit, our fifth city in size, is remarkable for its low index. As indicated previously, it has only 70 per cent of its pro rata share of those who have passed the sixty-fifth birthday.

The migration of the aged

It has been almost a truism that old people migrate very little and there still is no reason to suppose that they are as migratory as those in other age groups. Nevertheless the migrations of the aged must be considered as a principal factor in the redistribution of the elderly population that is under way, and the fact that the rate at which old people migrate is increasing must be considered as of great significance for the future. Unfortunately, there are few data which show directly the direction and amount of migration on the part of the population. However, Smith (1) and Hitt (2) have reasoned that if it were not for the migrations of persons at or near the retirement ages, the proportion by which the population aged 55 and over in one census decreased by the time it became the popu-

lation aged 65 and over in the succeeding census should closely approximate the corresponding change in each of the states. Therefore a comparison of these two age categories in two successive censuses offers a rough way of determining the amount of movement to or from a given state, city or county.

The most recent estimates for the states are those by Hitt, and these may be used to illustrate some of the more salient features of the movements. Certain states had considerably more persons aged 65 and over in 1950 than would have been the case had there been no migration of those at or near the retirement ages in the decade 1940 to 1950. On an absolute basis, the states receiving the largest contingents of such migrants are as follows: California, 130,000; Florida, 66,000; Texas, 32,000; Washington, 12,000; Louisiana, 12,000; Arizona, 9,000; Alabama, 8,000; and Oregon, 7,000. On the relative basis, the increase was largest in Florida, which had in 1950 39 per cent more persons aged 65 and over than would have been the case had there been no migration to or from the state. The corresponding percentages for other states most heavily influenced in this respect

TABLE 3

*Estimates of the Amount of Migration of Aged Persons Between Rural-Farm, Rural-Nonfarm, and Urban Territory in the United States, 1940–50, by Color and Sex**

Color, Sex, and Residence	No. of Persons 55 and Over in 1940	No. of Persons 65 and Over in 1950	Decrease, 1940–50			Estimated Net Migration†
			No.	Per cent	Index with U.S. = 100	
All categories	19,591,519	12,269,537	7,321,982	37.4	100	
White males	9,104,755	5,360,419	3,744,419	41.1	100	
White females	9,118,214	6,013,351	3,104,863	34.1	100	
Nonwhite males	710,545	436,638	273,907	38.5	100	
Nonwhite females	658,005	459,212	198,793	30.2	100	
Urban	11,293,743	7,418,211	3,875,532	34.3	92	+327,900
White males	5,038,814	3,065,502	1,973,312	39.2	95	+98,900
White females	5,609,181	3,865,708	1,743,473	31.1	92	+166,500
Nonwhite males	315,052	223,038	92,014	29.2	76	+29,400
Nonwhite females	330,696	263,963	66,733	20.2	67	+33,100
Rural-nonfarm	3,961,839	3,097,919	863,920	21.8	58	+619,800
White males	1,888,184	1,417,534	470,650	24.9	61	+305,900
White females	1,827,812	1,467,036	360,776	19.7	55	+261,600
Nonwhite males	127,196	104,708	22,488	17.7	46	+26,500
Nonwhite females	118,647	108,641	10,006	8.4	28	+25,800
Rural-farm	4,335,937	1,753,407	2,582,530	59.4	159	−947,700
White males	2,177,757	877,300	1,300,457	59.7	145	−404,900
White females	1,681,221	680,607	1,000,614	59.5	175	−428,100
Nonwhite males	268,297	108,892	159,405	59.4	154	−56,000
Nonwhite females	208,662	86,608	122,054	58.5	194	−58,700

* Data for the computations were assembled from the *United States Census of Population: 1950*, Vol. II: *Characteristics of the Population*, Part 1 (Washington, D. C., Government Printing Office, 1952).

† Plus sign (+) indicates gain by net migration; minus sign (−) indicates loss from net migration.

are as follows: Arizona, 25.3; California, 17.0; Louisiana, 7.1; Texas, 6.6; and Washington, 6.0.

The states supplying the largest numbers of elderly migrants in the decade under consideration are the following: New York, 60,000; Pennsylvania, 53,000; Illinois, 31,000; Ohio, 16,000; Massachusetts, 14,000; Iowa, 13,000; Indiana, 13,000; Missouri, 11,000; and Minnesota, 10,000. However, the loss was greatest, on a proportionate basis, in North Dakota where in 1950 there were 13.4 per cent fewer persons aged 65 and over than would have been the case had there been no migration to or from the state in the period 1940 to 1950. Other states with large losses on the percentage basis are as follows: South Dakota, 8.4; Vermont, 6.6; Wyoming, 6.1; Montana, 5.9; Pennsylvania, 5.6; Nebraska, 5.3; and Maine, 5.2.

Interestingly enough the five states receiving the largest numbers of elderly migrants during the decade 1940 to 1950 are exactly the same ones as those shown by earlier computations to have received influxes of persons at or near the retirement ages in the period 1930 to 1940. However, the volume of the movement between 1940 and 1950 was almost double that during the preceding decade (3, 4).

The movement between rural and urban areas of those who have passed the prime of life is another important aspect of the problem. Pertinent estimates on this matter have been made and are presented in Table 3. Observation of these materials indicates that there is a strong tendency for elderly persons, especially females and particularly Negroes, to abandon the farms for other residential categories. The rural nonfarm districts, and specifically the nation's small villages, are the places to which a large share of the migrants resort. However, during the decade 1940 to 1950 the number of old persons residing in urban centers increased by well over 300,000 as a result of migrations from other parts of the nation.

SUMMARY

The population of the United States is aging rapidly. During the first half of the twentieth century the number of those aged 65 and over increased by almost 300 per cent, whereas the population as a whole gained slightly less than 100 per cent. In 1900 only about 1 person out of every 24 was 65 or over, whereas in 1950 1 person in every 12 had passed the sixty-fifth birthday. There will probably be about 16,000,000 persons aged 65 and over in 1960, and the number of the aged in this country probably will continue to rise until 1990. Then it will probably decrease slightly by the year 2,000. Unless one can forecast the number of births, itself determined by other factors we likewise are unable to predict, the proportions of the aged for future years cannot be forecast with any degree of accuracy.

The larger number of babies born in the decade 1875–1884 than in the decade 1865–1874 is the principal cause of the increase of the aged population between 1940 and 1950. Well over 50 per cent of the gain must be attributed to this factor. Immigration accounted for about 23 per cent of the increase, and the improved expectation of life or the reductions of the mortality rates for approximately 20 per cent.

The distribution of the aged population is changing significantly. Among the states there is a tendency toward a more equitable distribution in relation to general population, although certain states are becoming Meccas for those in the advanced ages. The older people also are congregating in towns and cities to a much greater extent than in the past. Migrations of the aged are doing much to bring about this redistribution, and the movement to California, Florida, and other states along the Gulf and Pacific Coasts is especially significant.

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SURGICAL MANAGEMENT OF EMPHYSEMATOUS BLEBS AND BULLAE

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It would appear from a study of available sources that the incidence of generalized pulmonary emphysema is increasing in rather direct proportion to longevity (1, 2). Although the basic pathogenesis of this disease remains in doubt, the morphologic changes in the alveolar and vascular patterns are fundamentally atrophic in nature (3). In terms of pulmonary function this atrophy leads to serious interference with efficient air transfer and gas exchange. The condition may be reflected in a clinical picture of progressive dyspnea and perhaps even respiratory failure. Unfortunately, at the present level of knowledge, the therapeutic approach to this aspect of atrophy remains rather empiric and supportive.

DIAGNOSIS

At times, in the older age group, the only evidence of emphysematous stigmata is localized rather completely in the small bronchopulmonary segments. In these instances the predominant clinical findings are based essentially on dyspnea secondary to compressed, but virtually normal, lung parenchyma or to rupture of a peripheral air sac with the development of a spontaneous pneumothorax. In contradistinction to surgical therapy for generalized emphysema, correctly timed and proper surgical intervention for local emphysema or its sequelae will yield gratifying results.

Emphysematous blebs and bullae occur frequently in geriatric practice. In some large series studied, 25 per cent of the patients were over 60 years of age (3, 4). There is a distinct male and familial preponderance (3). Pathologically, blebs and bullae are similar, except for location. Blebs have an immediate subpleural position and the external wall is the visceral pleura. Bullae are more deeply imbedded in, and surrounded by lung substance. Both are formed by disruption of interalveolar septa secondary to a condition of free ingress but compromised egress of air from a cyclic, intermittent bronchial obstruction (5). The pressure gradient within these emphysematous cysts may exceed atmospheric pressure and, accordingly, they will dominate the hemithorax concerned, at the expense of the normal parenchyma. In this situation the presence and degree of dyspnea will depend on the speed of encroachment upon normal lung by the emphysematous cyst. If the compression is gradual, dyspnea may become evident only on exertion or not at all, and the lesion may be discovered inadvertently. Conversely, if the cyst balloons more rapidly, dyspnea will be marked and progressive. Moreover, dyspnea can develop subtly, because of the gradual increase in residual air or dead space provided by cystic areas in the presence of a rather stable tidal volume. This in turn lowers the efficiency of the respiratory system

by diluting dynamic air with more and more inert air. Chemically, the blood carbon dioxide level becomes elevated and dyspnea results. Other symptoms of these space-occupying pulmonary lesions may include ipsilateral chest pain and nonproductive cough.

Roentgenographic findings in emphysematous cystic disease will often escape detection and, in fact, are visualized better once the disease is considered. Since the diagnosis of this syndrome can be only presumptive without x-ray support, it is of some importance to include emphysematous cysts in the differential diagnosis of progressive dyspnea. The typical x-ray entity consists of a hair-line

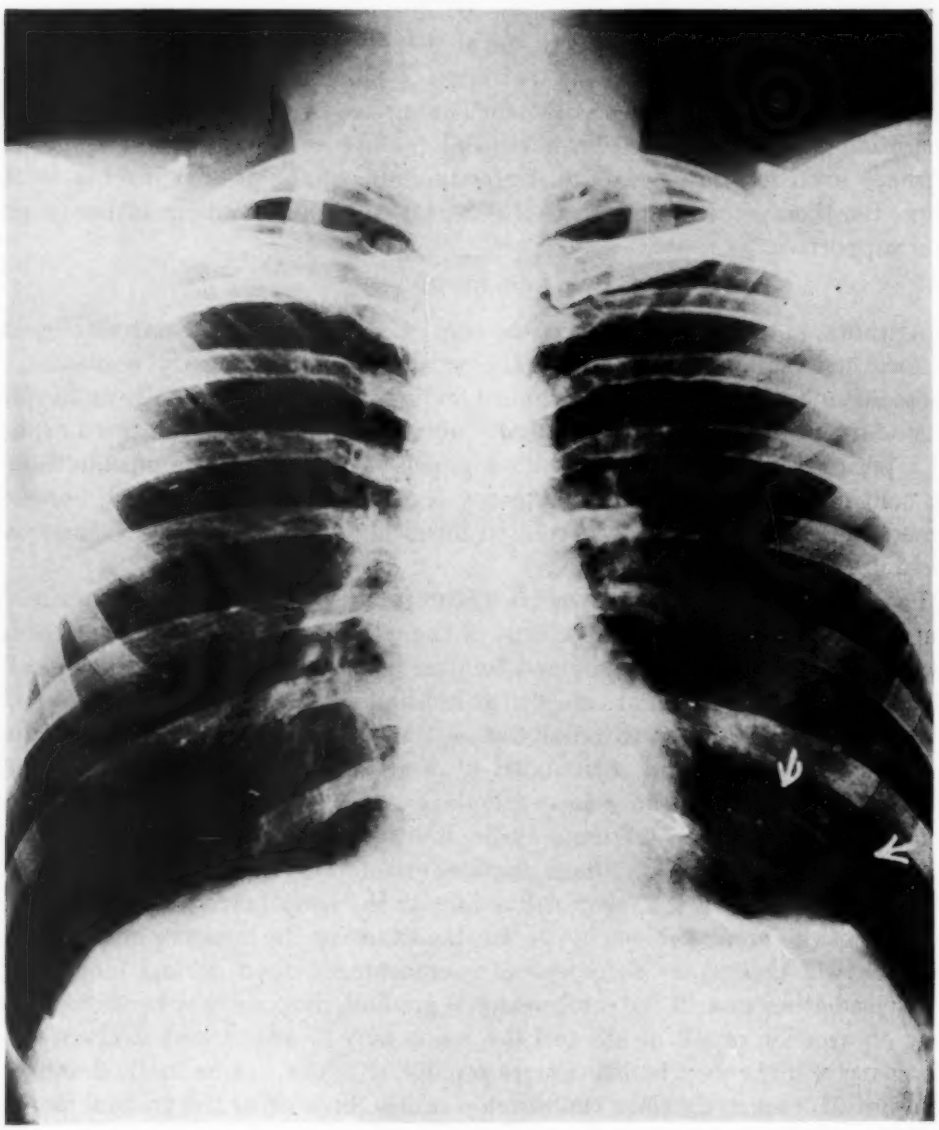

FIG. 1A. Preoperative chest roentgenogram, illustrating a single, unilocular emphysematous bleb in left lower lobe.

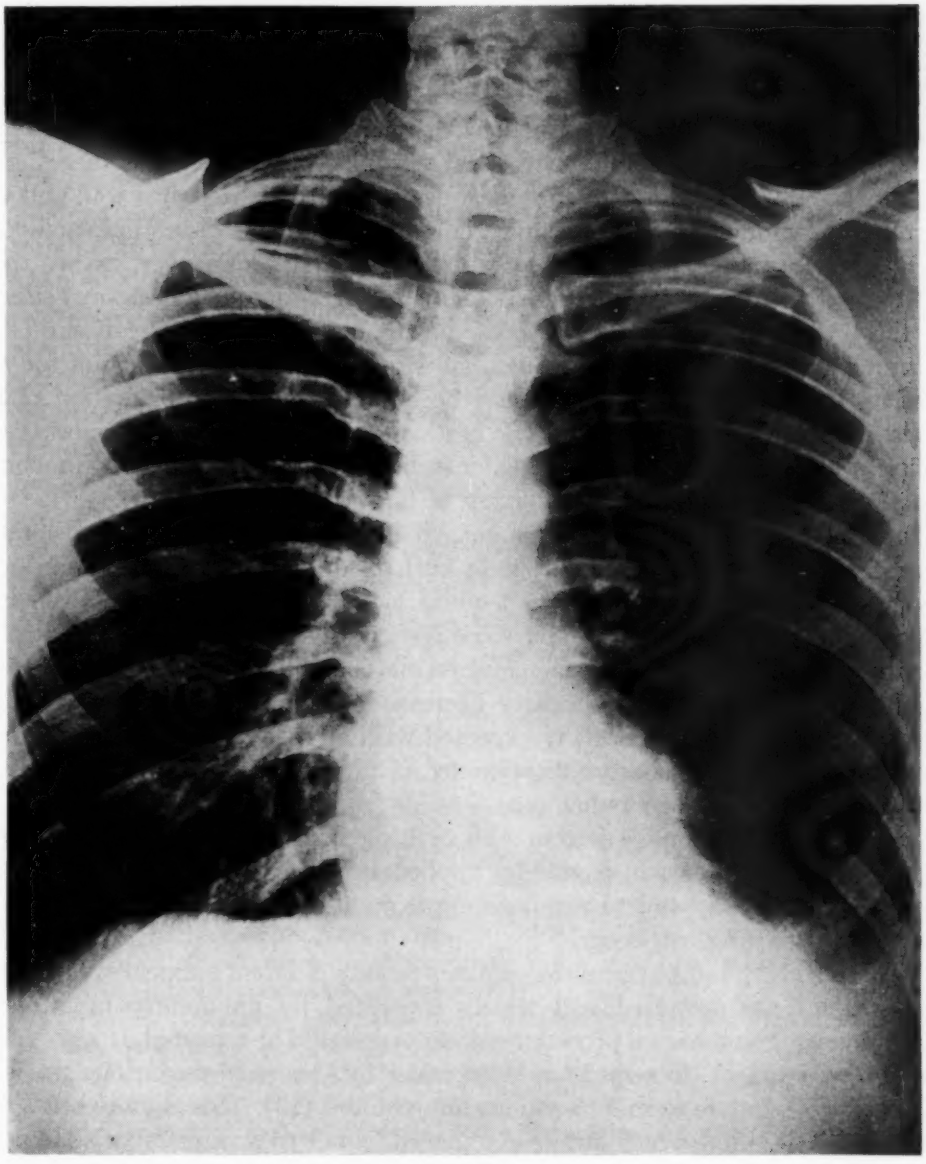

FIG. 1B. Chest roentgenogram five days following excision of emphysematous bleb in left lower lobe and talc poudrage.

area of density more or less encircling lung parenchyma of increased translucency with no pulmonary markings (Figs. 1A and 1B). Giant cysts are more obvious, but at times are difficult to distinguish from intrapleural air (6, 7).

SURGICAL TREATMENT

If localized emphysematous cystic disease can be incriminated as the cause of the pulmonary symptoms, then surgical correction may be feasible. The exact extent and type of operation must await the actual visualization of the intra-

thoracic condition in the individual patient (8). Peripheral blebs, the walls of which are not epithelialized, may be handled by excision of the visceral pleura covering the bleb and obliteration of the dead space and bronchial communications (9). If the bleb wall is epithelialized, then total excision of the wall must be accomplished before obliterative healing will occur (10). Since there often are no clear-cut planes of dissection between the epithelialized cyst wall and the surrounding pulmonary parenchyma, the operative line of dissection should be in lung tissue immediately adjacent to the wall. This maneuver, rather than extirpation more proximally (such as segmental resection or lobectomy) should be the procedure of choice, as it preserves more functioning lung tissue (11). Extreme care must be taken to control all sites of bronchial leak. If not too extensive, the defect in the lung should be obliterated by approximation of its walls. If the defect is large, it may be best to ignore it provided pneumostasis is secure, since approximation in this instance would compromise pulmonary function by compression and distortion of large areas of lung (10).

In most instances of surgically managed blebs and bullae the intrathoracic procedure is concluded by poudrage of both pleural surfaces with sterile talc, and then provision is made for adequate closed intrapleural tube drainage. Talc poudrage would seem to offer some security against the development of a spontaneous pneumothorax from emphysematous blebs, by hastening pleural symphysis. Since there is no decisive decrease in pulmonary function following talc poudrage over that normally expected with any thoracotomy, there would appear to be no real contraindication to its inclusion in the overall surgical management of blebs and bullae (12).

A proper closed drainage system with multiple intrapleural tubes is of utmost significance. Mild suction should be applied in an attempt to obliterate the pleural space quickly and to maintain approximation of the pleural surfaces so that pleural healing can occur.

Variations in the emphysematous pattern require different surgical approaches. If the blebs are scattered and widely separated by apparently functioning parenchyma, the excisional procedures described should be repeated. If a bronchopulmonary segment, lobe or lung is replaced by the emphysematous process, then larger and more formal resections are required (13). This is more often the situation with bullae which are deeply placed, closer to a primary or secondary pulmonary hilum, and hence not so amenable to localized excision. If emphysematous blebs and bullae are severely symptomatic in a patient with systemic deterioration, closed catheter drainage of the offending emphysematous cyst or cysts may be the initial procedure of choice, rather than thoracotomy. Desperately ill patients can be salvaged with this method (14).

Some of the *complications* of blebs and bullae should be included in the sphere of surgical care of the emphysematous patient. A ruptured bleb is by far the most frequent etiologic factor in the development of spontaneous pneumothorax (15–18). If the collapse is minimal, expansion will usually occur within a reasonable length of time without therapy. If the pneumothorax is large, intermittent needle aspiration or continuous closed catheter drainage may be preferred, in

order to expedite expansion. A thorough acid-fast study should be included routinely in all instances of spontaneous pneumothorax. If the pneumothorax recurs homolaterally in the absence of positive findings for tuberculosis, a thoracotomy is indicated and the source of the pneumothorax is handled according to the principles outlined previously (7, 19).

The persistence of a spontaneous pneumothorax will lead eventually to irreversible tissue changes which will incarcerate the lung. This mechanical barrier to pulmonary re-expansion should be removed surgically (20). At the time of thoracotomy, decortication is the essential maneuver and should be followed by conservative excision of the lesions causing the pneumothorax (21), secure pneumostasis, talc poudrage, and expansion of the underlying lung (22). Postoperatively, it may be important to employ specific breathing exercises in order to encourage pulmonary rehabilitation.

The application of these surgical principles for the treatment of localized emphysema per se, or its complications, can at times dramatically alter the course of progressive respiratory insufficiency. Other surgical procedures for emphysema and diseases causing respiratory dyspnea are in the process of development. One approach principally involves pulmonary autonomic denervation technics for the bronchospastic factor which is so prevalent in emphysema and other chronic lung ailments (3, 23). More recently, resection of the parietal pleura and pleurodesis have been used to interrupt the degenerative and atrophic nature of pulmonary emphysema, by promoting collateral blood flow to the lung (24).

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THE FATE OF THE CHOLECYSTOSTOMY PATIENT*

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INTRODUCTION

Following the direct surgical attack upon a large hydrops of the gallbladder on June 15, 1867 by Doctor John S. Bobbs (1), cholecystostomy was for the next fifty years the accepted operation for cholelithiasis. Although Langenbeck successfully removed the gallbladder in 1882, cholecystectomy was the less frequently performed operation until sometime between 1910 and 1920. Cholecystostomy as a definitive procedure was subsequently replaced by cholecystectomy. In this evolutionary change there has been a tendency for many surgeons to overlook the usefulness of cholecystostomy as the more expedient operation to meet a difficult situation. Indeed one may conclude from the discussions of some recent articles on biliary-tract surgery that to employ cholecystostomy is to admit partial defeat in the surgical treatment of biliary-tract disease.

Patients upon whom cholecystostomy has been performed are those who present the surgeon with problems of a more complex nature than are usually encountered in the surgical treatment of biliary-tract disease. Cholecystostomy may be a life-saving operation and under certain conditions it is the procedure of choice. Under such circumstances cholecystostomy is a compromise procedure that may avert disaster and tide the patient over for definitive treatment later when it can be accomplished with little risk.

There were 153 cholecystostomies among 3,643 patients undergoing 4,059 operations on the biliary tract in this center (Table 1). Most, but not all of these 153 patients were operated upon during a phase of acute cholecystitis.

In presenting our experience with this group, two items will be emphasized: 1) *An evaluation* of the results of cholecystostomy in meeting the immediate problem. 2) *The course and eventual fate* of the patients in whom subsequent elective cholecystectomy is not performed.

Interesting studies of the ultimate fate of patients following cholecystostomy during the pre-antibiotic era were made by Eliason and Ferguson (2), Spurling and Whitaker (3) and others. Although there has been a slow decline in the use of the cholecystostomy (in the treatment of biliary-tract disease) in most medical centers of this country (Table 2), this process now seems to have halted. Routine frequent use of this procedure continues, notably in the large hospitals devoted exclusively to the care of aged patients (Cutler (4)). It is apparent that many patients who were formerly treated by cholecystostomy, now receive a primary cholecystectomy. It seems equally certain that many patients formerly considered too old or too infirm for surgery of any type, are now being subjected to cholecystostomy.

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TABLE 1

Relative Frequency of the Use of Cholecystostomy
1932–1951

Total number of patients admitted for nonmalignant diseases of biliary tract	3,643
Total number of operations performed for nonmalignant disease of biliary tract	4,059
Total number of cholecystostomies performed	153
Total number of cholecystostomies performed for nonmalignant disease of biliary tract	103
Total number of cholecystostomies performed for miscellaneous indications	50

TABLE 2

Year	Author	Series limited to acute cholecystitis			Series including all biliary-tract disease		
		Total	Cholecystostomies	Per cent	Total	Cholecystostomies	Per cent
1927	Deave and Bortz				861	14	1.60
1931	Graham, H.	204	34	16.60			
1931	Santee				319	20	6.20
1933	Judd and Phillips	597	89	14.90			
1940	Fallis-McClure	320	0	0			
1944	Eliason and Stephens	135	92	68.14			
1947	Adams (Lahey Clinic)	55	6	10.90	1,104	6	0.55
1949	Cutler (aged)	26	17	65.38			
1949	Dunphy and Ross	148	22	14.8			
1950	Grace				345	9	2.60
1950	Mayo Clinic				1,204	10	0.83
1951	Thompson				500	18	3.60
1951	Mayo Clinic				1,227	38	3.09
1952	Borland	108	3	2.70			
1954	Hays and Glenn (1932–1951)	687	103	14.90	3,643	103	2.90

The continued use of cholecystostomy prompts a re-evaluation of the principles concerning this procedure—particularly in the light of the universal employment of antibiotic therapy in such cases (since approximately 1946). Is the performance of elective cholecystectomy following cholecystostomy actually justified? What is the subsequent history of these patients if they do not have elective cholecystectomy? The New York Hospital-Cornell Medical Center group seemed ideal for a survey which would answer these questions; for not only had the vast majority of patients not undergone elective cholecystectomy, but they were almost all aged and were geographically still close to the site of their initial hospitalization and operation. The very low percentage subjected to elective cholecystectomy seemed somewhat appalling; but at the same time an excellent series was provided with which to answer the questions related to the ultimate course of the post-cholecystostomy patient who does not undergo elective cholecystectomy.

TABLE 3

Minor Decline in the Use of Cholecystostomy for Biliary-Tract Disease

	1932–36	1937–41	1942–46	1947–51
Total Cases: *Biliary-tract disease*	622	881	826	1314
cholecystostomies	21	27	26	29
% cases with biliary-tract disease	3.4	3.1	3.1	2.2
Total cases: *Acute cholecystitis*	153	191	155	188
Cholecystostomies	21	27	26	29
% cases with acute cholecystitis	13.7	14.1	16.8	15.4

PRESENTATION OF DATA FROM THE NEW YORK HOSPITAL-CORNELL MEDICAL CENTER

During the period 1932–1951, 153 cholecystostomies were performed on patients with various diagnoses in The New York Hospital-Cornell Medical Center[1]. One hundred and three of these patients had some form of cholecystitis.

Analysis of the cases of biliary-tract disease in each of the four five-year periods (1932–1951) (Table 3) revealed that the employment of cholecystostomy had varied only slightly, as between 21 and 29 such operations for biliary-tract disease had been carried out in each of the four periods. This represented 2.2 to 3.4 per cent of the total number of operative cases of biliary-tract disease; and 13.7 to 16.8 per cent of the total number of cases of acute cholecystitis in each of the five-year periods (Table 3).

Rationale behind the choice of cholecystostomy

The 153 cholecystostomies performed in this center during the period of study were initially divided into groups, on the basis of the rationale behind the selection of the procedure (Table 4). Although this was difficult in some cases, because several different factors apparently might have played a role in the decision to resort to cholecystostomy, in most it was apparent that the surgeons were influenced decisively by one factor.

Group I was the largest and consisted of 49 patients in whom the local inflammatory reaction in the region of the cystic duct and choledochus was so intense as to deter the operator from further dissection in this region (Table 4). This was sometimes described as "an obliteration of normal landmarks by acute inflammation." Some operators specified that fear of choledochal injury was the major impetus to consider cholecystostomy. Most of these patients were aged; and had evidence of significant degenerative disease processes. These procedures were carried out under general anesthesia, however, and the decision to substitute cholecystostomy for cholecystectomy was made at the operating table (in contrast to Group II).

Group II (Table 4) consisted of 45 patients who had acute cholecystitis and in addition, a known severe, chronic disease process. These were cases in which the decision to perform a cholecystostomy was ordinarily made preoper-

[1] Ward (Pavilion) patients only.

TABLE 4

Group	Rationale leading to cholecystostomy	No. of cases
I	Local inflammatory reaction of gallbladder and choledochal area. Obliteration of "normal landmarks." Fear of choledochal injury.	49
II	Severe chronic disease process associated with apparent acute cholecystitis; "elective cholecystostomy."	45
III	Acute disease process (nonbiliary-tract) associated with apparent acute cholecystitis.	9
IV	Decompression of biliary tract in debilitated patient with common-duct obstruction.	6
V	Decompression of the biliary tract following operative trauma in region of the choledochus.	11
VI	Decompression of the biliary tract in primary pancreatitis.	11
VII	Decompression of the biliary tract in such conditions as inoperable malignancy or congenital atresia.	22
	Total	*153*

atively, and the procedure carried out under local anesthesia. They represented such conditions as major cardiac disease (22 patients), chronic pulmonary processes, carcinoma (outside the biliary tract) and cirrhosis.

In Group III (9 patients) were those cases in which acute cholecystitis was associated with an acute disease process elsewhere in the body, *e.g.*, pneumonia or pyelonephritis. On the basis of the combination of these simultaneous acute illnesses, the decision was made preoperatively to utilize the minimal procedure, cholecystostomy, to meet the immediate situation.

Group IV consisted of 6 aged, debilitated patients with intense jaundice, who were seen only during the early years of the study. They were presumed to have choledochal calculi (autopsy usually confirmed this impression) and cholecystostomy was performed to decompress the biliary tract preparatory to a secondary procedure, which often was never carried out. Following the introduction of vitamin K, the extensive use of antibiotics, and the concept of fluid and electrolyte replacement, such patients were usually successfully prepared for choledochotomy.

In Group V (11 patients) cholecystostomy was incidental to another operative procedure, *i.e.*, resection of a duodenal ulcer lying adjacent to the choledochus. These operations were performed on apparently normal gallbladders, with the intent of temporarily decompressing the biliary tract.

The 11 patients in Group VI had pancreatitis. The diagnosis was usually established at the operating table. Cholecystostomy was largely performed during a circumscribed period (1945–1950) during which it was felt that this operation might affect the course of this disease.

In a final group of 22 patients (Group VII) the cholecystostomy was performed to decompress a biliary tract obstructed by a lesion such as carcinoma. In general, this is now only of historical interest, as this procedure has been almost completely replaced by that of internal drainage.

TABLE 5

Immediate Outcome in 103 Cases of Cholecystostomy for Biliary-Tract Disease

	Group I*	Group II	Group III	Total
Total cases	49	45	9	103
Postoperative deaths†	4	5	2	11
Returned for elective cholecystectomy	9	4	1	14
Did not return for elective cholecystectomy	36	36	6	78

* Groups defined in Table 4.

† Death during period of hospital admission.

The immediate results of cholecystostomy

The immediate outcome following cholecystostomy in those patients with primary gallbladder disease was subjected to further study (Table 5). Among the 49 cases in Group I there were 4 postoperative deaths secondary to (a) cholangiohepatitis and biliary cirrhosis (2 cases), and (b) peritonitis secondary to perforation (2 cases). These were fatalities following protracted postoperative periods (average, twenty-nine days) with severe sepsis, such as occurred in the era prior to the use of antibiotics in what is now regarded as therapeutic dosage. No death of this type has occurred since 1946. A much wider scattering of the causes of death is noted among the postoperative fatalities in Group II and Group III (cases with some severe associated disease process). These causes include intracerebral hemorrhage, adrenal insufficiency, cardiac failure, coronary thrombosis, acute pancreatitis, hemorrhage from esophageal varices, and biliary cirrhosis. Such deaths continue to occur.

Nine (20 per cent) of the 45 surviving patients in Group I returned for elective cholecystectomy. We use the term "elective" here in the sense that the patient returned for cholecystectomy on the advice of the surgeon, who recognized the dangers of further biliary-tract disease. It does not include those patients who initially refused cholecystectomy and then, following severe symptoms associated with exacerbation of chronic cholecystitis or following chronic and/or recurrent drainage from a biliary fistula, were forced to reconsider and accept cholecystectomy. Four patients (10 per cent) in Group II and 1 patient in Group III returned voluntarily for such a definitive procedure. There was no mortality in this group undergoing elective cholecystectomy. There were no complications referable to the biliary-tract operation. No choledochal calculi or other forms of biliary-tract disease developed following these procedures (four-year study).

Thus, of the total group of patients with primary biliary-tract disease subjected to cholecystostomy only, 14 (15 per cent) returned for elective cholecystectomy; and 78 (76 per cent), either through their own or their physician's intent, were not subjected to an interval cholecystectomy. The ultimate course of these patients following cholecystostomy (without subsequent cholecystectomy) was then studied by interview and examination (90 per cent) or correspondence (10 per cent).

TABLE 6

Recurrence of Biliary-Tract Symptoms in 78 Patients Who Failed to Return for Elective Cholecystectomy

	Group I* (36 cases)	Group II (36 cases)	Group III (6 cases)	Total
I. Asymptomatic until death, or up to present time...	13	12	1	26
II. Recurrent biliary-tract disease				
a) Acute cholecystitis	1	7	0	8 [6]†
b) Common-duct stone‡	5	3	1	9 [5]
c) Biliary-tract carcinoma	1	0	0	1 [1]
d) Severe symptoms; chronic cholecystitis	4	3	3	10 [8]
III. Persistent complications, biliary-tract disease				
a) Biliary sinus, fistula or abdominal-wall abscesses	6	6	0	12 [6]
b) Incisional hernia	5	4	0	9 [3]
IV. Lost to follow-up	1	1	1	3
			Total	*78 [29]*

* Groups defined in Table 4.

† Numbers in brackets indicate cases requiring operation on biliary tract.

‡ Cholecystoduodenal fistula in 1 case.

Recurrence of biliary-tract disease

Among these 78 patients (Table 6) who did not undergo elective cholecystectomy, 26 were completely asymptomatic with reference to biliary-tract symptomatology, until their death or the present (May, 1954). An additional 3 patients were lost to "follow-up" study, *i.e.*, could not be studied for at least four years post-cholecystostomy. This is a total of 29 patients (37 per cent).

In 18 of the remaining 49 patients (23 per cent of the original 78) acute or urgent biliary-tract disease developed. In 8 cases this consisted of acute cholecystitis; in 9, a common-duct calculus; and in 1, carcinoma of the biliary tract.

In 8 patients acute cholecystitis developed subsequent to cholecystostomy. In 5 cases this occurred more than two years following cholecystostomy, and in 3 cases, more than four years following this operation—associated with the persistence or re-formation of calculi. One fatality occurred among these 8 cases, following emergency cholecystectomy in another hospital. Five additional patients were treated surgically in this center without mortality.

An unequivocal, obstructive choledochal calculus developed in 8 patients (10 instances) subsequent to cholecystostomy. These calculi occurred approximately two years after the original procedure.

There was 1 fatality in this group—in a patient whose therapy for an obstructing calculus was delayed, and whose death can be attributed to biliary-tract disease (no operation). Five additional patients had choledochotomies without mortality.

Among a series of 101 patients with carcinoma of the extrahepatic biliary tract (gallbladder, extrahepatic ducts, or ampulla of Vater) observed in this center since 1932, 7 had undergone previous cholecystostomy (twice in some

instances). These cases appear to fall into two distinct groups. In 2 cases the cholecystostomy was performed twenty to thirty years prior to the development of carcinoma (gallbladder). This would merely re-emphasize the well recognized tendency for neoplasm to appear in a gallbladder following prolonged chronic inflammation. The other 5 patients underwent cholecystostomy for apparent benign biliary-tract disease[2]. Within eighteen months, at re-operation, they were found to have carcinoma of the gallbladder (2 cases), extrahepatic ducts (1 case), or ampulla of Vater (2 cases). These must be regarded as instances of mis-diagnosis; and the consequent delay in appropriate therapy, unfortunate.

In 31 patients (40 per cent of the total group) there developed significant chronic biliary-tract disease or associated complications, *i.e.*, conditions rarely immediately fatal although possibly extremely disabling (Table 6). Ten patients had recurrent, severe attacks of chronic cholecystitis, causing the patient to reconsider and elect to submit to operation in 8 instances. This occurred approximately two years after cholecystostomy. Twelve patients had persistent biliary fistulae or sinuses (with at least one year's continuous drainage) or recurrent right upper quadrant abdominal-wall abscesses requiring surgical drainage. In 6 instances cholecystectomy was eventually resorted to, in order to terminate this chain of events. In 9 patients (12 per cent) significant incisional herniae developed at the site of cholecystostomy. In 3 of these, cholecystectomy was finally performed in conjunction with herniorrhapy (Table 6). The remaining patients elected to wear external supports.

In summary, 49 (63 per cent) of those patients denied elective cholecystectomy following cholecystostomy had subsequent biliary-tract disease or associated complications; 11 of these required subsequent emergency surgical intervention for biliary-tract disease, and 18 additional patients eventually submitted to cholecystectomy because of persistent symptoms.

Recurrence of biliary-tract symptoms in special patient groups

A small group of 10 patients had cholecystostomy performed for acute cholecystitis in the presence of malignancy (nonbiliary-tract) or advanced cirrhosis. These patients had neoplasia beyond control (gastric, ovarian or colonic carcinoma), leukemia, or Laennec's cirrhosis with bleeding varices. They survived for an average of 1.3 years following cholecystostomy (no elective cholecystectomies were performed) and in no instance had severe symptoms or other significant difficulties of biliary-tract origin. In contrast, among the 50 patients in whom cardiac disease was a significant factor in the decision to employ cholecystostomy, 79 per cent had subsequent biliary difficulties, 45 per cent required eventual cholecystectomy, and 26 per cent were subjected to subsequent emergency operations on the biliary tract under decidedly adverse circumstances (Table 7).

When a cholecystostomy is performed in a patient with a normal gallbladder (Table 4, Groups V and VI) it closes promptly and without incident. None of the patients in this category had subsequent biliary-tract disease; and of the 5

[2] Four of these procedures were carried out in other hospitals.

TABLE 7

Recurrence of Biliary-Tract Symptoms Among 50 Patients in Whom the Presence of Severe Chronic Cardiac Disease Was a Major Factor in the Decision to Perform Cholecystostomy

A. Total Number Failing to Return for Elective Cholecystectomy			38
I. Acute biliary-tract complications		10	
a) Common-duct stone	5 [2]*		
b) Acute cholecystitis	5 [4]		
II. Chronic biliary-tract complications		20	
a) Persistent fistula, sinus or abdominal-wall abscess	11 [6]		
b) Incisional hernia	5 [2]		
c) Severe symptoms; chronic cholecystitis	4 [3]		
III. Asymptomatic until death or up to present time		8	
IV. Lost to follow-up		0	
B. Postoperative Death			6
C. Elective Cholecystectomy			6

* Numbers in brackets indicate cases requiring biliary-tract surgery.

cases studied by cholecystogram following operation, 4 showed normal function of the gallbladder.

The period of study in this entire series was either until the death of the patient or, in the living, for an average of ten years and a minimum of four years. Any patient on whom no report was available for at least four years[3], was classified as "lost to follow-up" (Table 6). Among those who did not return for cholecystectomy (either elective or emergency), 17 were followed until death (4.1 years), and the remaining 21 were followed for an average of over nine years. Patients who underwent cholecystectomy (either elective or emergency) were studied postoperatively for an average of six years or a minimum of four years.

The cholecystogram in post-cholecystostomy patients

In 25 cases, for diverse reasons, a cholecystogram (or a series) was obtained after a period of at least one year following cholecystostomy (Table 8).

The group of patients in whom cholecystostomy was performed for nonbiliary-tract disease, *i.e.*, with normal gallbladders, had cholecystograms taken subsequently which, in all but 1 instance, showed excellent function.

Among the 20 patients in whom biliary-tract inflammation had been demonstrated at the time of cholecystostomy, the results of the Graham test varied remarkably. In 11 patients, despite repeated cholecystograms the gallbladder was not visualized; in 6 the gallbladder was functioning but contained calculi; and in 3 it was apparently functioning normally.

The incidence of recurrent important biliary-tract disease among these three groups was surprising (Table 8). Among 11 patients with gallbladders which showed no function, 7 had subsequent significant biliary-tract disease. Among the 6 patients in whom the gallbladder was a functioning organ but contained calculi, 4 were subject to later severe attacks. Surprisingly enough, among the

[3] Except for 12 patients seen in 1950–1951.

TABLE 8

Cholecystograms in 25 Patients Following Cholecystostomy

Ultimate result	Non-functioning gallbladder	Functioning gallbladder with stones	Functioning gallbladder (normal)
1. *Biliary-tract disease (total)*	11	6	3
a) Elective cholecystectomy, with or without minor biliary-tract disease	4	0	1
b) Severe symptoms of chronic cholecystitis	4	1	1
c) Common-duct stone	2	1	1
d) Acute cholecystitis	1	2	
e) Asymptomatic until death or up to present time	0	2	0
2. *Nonbiliary-tract disease (total)*	1		4
a) Asymptomatic until death or up to present time	1		4

3 patients with normally functioning gallbladders, 2 subsequently had significant disease (including common-duct calculi).

DISCUSSION

The presented group of patients, subjected to cholecystostomy between 1932 and 1951, were Pavilion cases cared for in this center. The general policy toward the use of cholecystostomy did not alter appreciably during this period; and the frequency of its use, in relation to either the total number of biliary-tract cases or to the total number of cases of acute cholecystitis, was relatively constant throughout (Table 3). Cholecystostomy was included in 2 (4 per cent) of the biliary-tract procedures; and it was used in 13 (17 per cent) of the cases with acute cholecystitis. This relative constancy of employment was not appreciably influenced by the extensive use of antibiotics, or by other therapeutic advances of the past twenty years.

Only approximately 10 per cent of the patients returned to the hospital for elective cholecystectomy. Of the remaining 90 per cent who did not undergo subsequent elective cholecystectomy, approximately 25 per cent required emergency operative intervention for recurrent biliary-tract disease, and an additional 40 per cent had chronic debilitating symptoms of biliary-tract origin.

In patients whose life expectancy is less than two years (*e.g.*, malignancy with dissemination, and cirrhosis with bleeding varices) there is little likelihood of biliary-tract disease playing a significant role in their course, and elective cholecystectomy seems unnecessary.

In other cases (*e.g.*, cardiac disability, even of an apparently severe degree; and pulmonary or renal disease subject to possible improvement or control by intelligent medical management) elective cholecystectomy is usually indicated. Life expectancy in these cases is progressively increasing. The mortality for elective cholecystectomy in such a group, well prepared for operation, is less than 2 per cent (5). It is unfortunate that these patients, with their primary disease well controlled, should be afflicted by disabling or even fatal biliary-tract disease which is readily remediable.

A current trend in surgical thought regards the resort to cholecystostomy as a defeat, or even a reflection on the capabilities of the operator. We in no sense support this point of view. Cholecystostomy is an essential part of the armamentarium of any surgeon, and probably deserves greater use than at present, particularly by the occasional operator.

Our purpose is simply to show that cholecystostomy can only rarely be regarded as definitive therapy. In most cases it must be followed by elective cholecystectomy.

SUMMARY

Cholecystostomy is a dependable, safe, operative procedure for use in patients in whom cholecystectomy is contraindicated. If life expectancy is less than two years—for example, in patients with uncontrolled carcinoma or leukemia—it may be assumed that death will occur from the primary disease before further biliary-tract difficulties develop.

If, however, the patient's life expectancy is more than two years (and life expectancies are rising steadily) it may be anticipated, at least from our data, that the chances of subsequent symptomatic biliary-tract disease are greater than 50 per cent. The possibility of such patients requiring emergency biliary-tract surgical intervention under less than optimum circumstances are excellent. Thus, elective cholecystectomy is still indicated following cholecystostomy.

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HORMONES, GROWTH AND SENESCENCE*

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The physician, consciously or sub-consciously, spends his life hunting for the "philosopher's stone." In the space of a few generations, using the tools placed in his hands by his brethren in the basic sciences, he has conquered a host of parasitic agents which formerly destroyed great numbers of the population. As a result, increasing portions of the physician's practice come from the group of very young persons who have been saved from pathogenic microorganisms, and from the group of elderly persons who, having survived the ravages of infection, are increasingly aware of the ravages of time. Obviously then, the physician in the years ahead will concern himself increasingly with the phenomenon known as *growth*, in both its *positive* and *negative* aspects.

In 1912, Carrel placed in culture medium a portion of the heart of a chicken. This tissue is still living and growing, forty years beyond the life expectancy of the chicken of which the heart was originally a part. So far as one can predict, the heart will still be living and growing thousands of years hence, assuming that basic nutrients are continuously supplied, and products of tissue catabolism are continuously removed.

From this observation, it appears that there is nothing about animal tissue which per se decrees that it shall not continue to survive forever; yet the span of life of any animal species (plus or minus a few years) appears to be fixed. Wherein lies the difference between "chicken-on-the-hoof" and isolated chicken heart?

The answers to this question must lie in at least three fields—heredity, external environment, and internal environment.

That *heredity factors* are of importance is readily apparent from the available data regarding breeding of stock. Careful breeding can result in stronger, larger, more productive and more long lived animals. The most careful breeding program, however, adds but a few months or years to the life span of any group.

Under the heading of *external environment* are included most prominently nutrition, and factors concerning resistance to, or protection against disease. Again the growers of livestock have shown us the importance of these factors in relation to optimal growth and longevity. Nevertheless, those animals least carefully nourished and protected will grow, reproduce and eventually die as surely, albeit less well, than their more carefully reared brethren.

What of the *internal environment?* Do the basic answers to acceleration, maintenance and deceleration of growth lie in this sphere? Only the Master Architect knows the correct answer. In our hands, however, are pieces of in-

* Presented at the Annual Meeting of the American Geriatrics Society, San Francisco, California, June 17–19, 1954.

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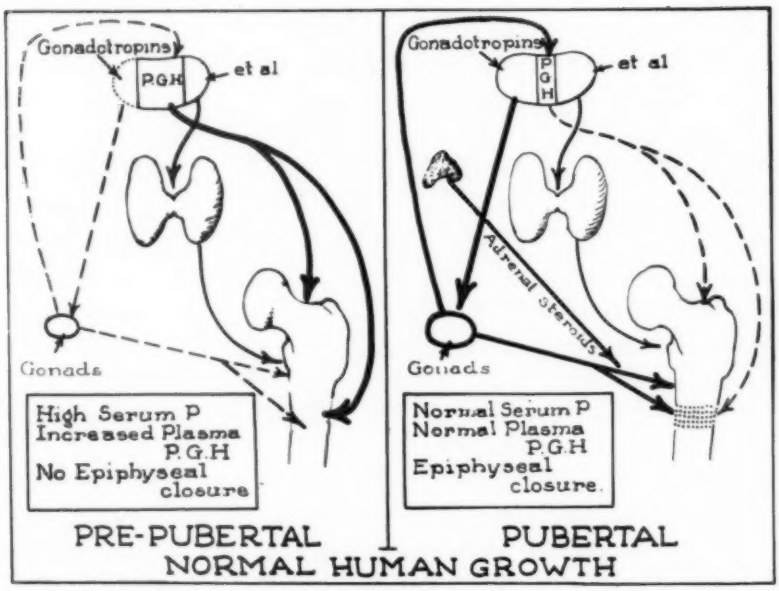

FIG. 1. (Reproduced with permission of Charles C Thomas, Publisher, Springfield, Illinois, from Kinsell *et al.*: *J. Clin. Endocrinol.* **8:** 1013, 1948.) The normal sequence of events in regard to hormonal regulation of growth appears to be: 1. Growth acceleration by the pituitary growth hormone, from birth until puberty. Epiphyseal growth without epiphyseal maturation is characteristic of this period. 2. Inhibition of pituitary growth hormone production by gonadal steroids. 3. Growth acceleration by gonadal and adrenal steroids following puberty. This is characterized by epiphyseal growth, maturation, and eventual closure. Serum inorganic phosphorus concentration can serve as an index of pituitary growth hormone production.

formation which appear to have some bearing. That portion of this information which has to do with the effect of hormones, is both pertinent and perplexing.

In the human, growth occurs in two spurts (1) (Fig. 1). In the early years of life, growth acceleration appears to be largely or entirely under the control of the growth hormone derived from the anterior pituitary. The second growth spurt, occurring during and following puberty, is under the control of the steroid hormones derived from the male and female gonads and from the adrenal cortex. Other hormonal factors are also concerned with growth, but appear to be accessories rather than initiators. Included most prominently among these are the thyroid hormone and insulin.

On the anti-growth side, at least in terms of present knowledge, one finds only cortisone-like steroids derived from the adrenal cortex, and the thyroid hormone. As noted previously, the thyroid hormone in physiologic amounts is growth-promoting; only in excessive amounts does it have a net anti-growth effect. Probably much the same can be said for cortisone-like compounds.

In Figure 2 are shown schematically the major hormonal factors involved in growth and senescence. It should be emphasized that this concept, although essentially factual, is incomplete and subject to later modification. Whatever the modifications, there appears to be little question that roughly twenty years

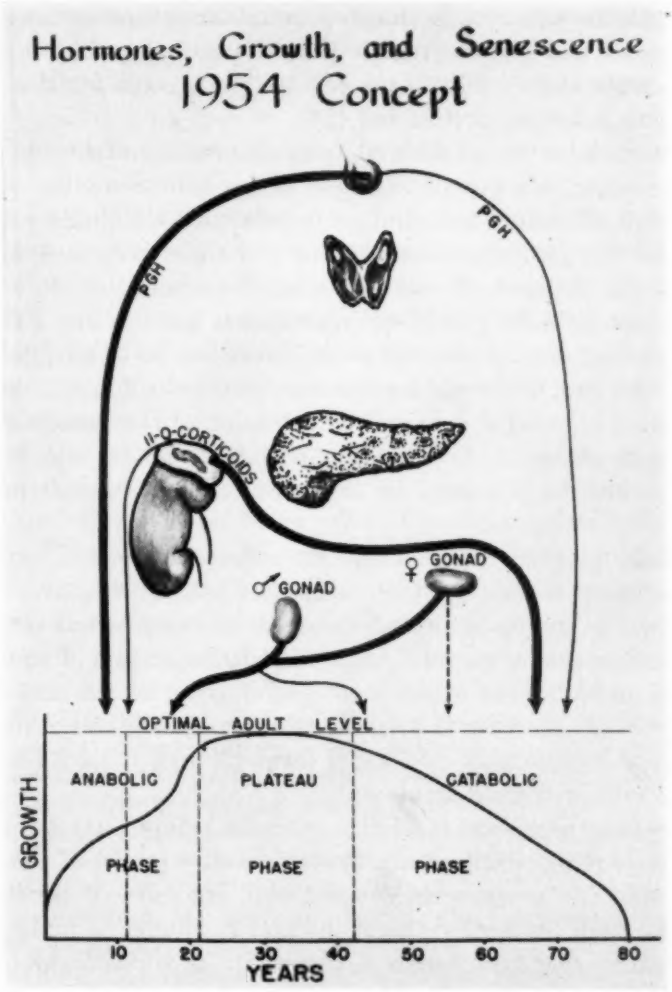

FIG. 2. There is need for clarification regarding the actual level of pituitary growth hormone production, and of qualitative and quantitative adrenocortical function in the "catabolic phase."

of an average lifetime are spent in a state of positive growth or *anabolism*, an equal period in maintenance of a more or less constant plateau, and the remaining years in a state of negative growth or *net catabolism*.

The most vulnerable portion of the 1954 concept lies in the question: "What happens to the pituitary growth hormone after puberty?" As previously indicated, there is abundant clinical evidence that this hormone is produced in large quantities before puberty. The information available from the study of giants and acromegalics indicates that if this rate of hormone production were to continue unabated, linear growth, periosteal growth, and soft tissue growth would continue indefinitely, and would result in individuals far different from those whom we now consider as average adults. On these grounds, therefore, one must conclude tentatively that with the onset of puberty, or possibly before,

inhibition of pituitary growth hormone production occurs. Information derived from acromegalics and giants suggests that the growth-promoting steroid hormones of the male and/or female gonads are responsible for this inhibition of pituitary growth hormone production (1).

That the steroid hormones derived from the male and female gonads, particularly the former, are potent anabolic or growth-promoting agents is well substantiated by laboratory and clinical evaluation (2). Equally well established is the fact that the growth-promoting effect of these hormones is self-limited. In the case of the skeleton, the steroid-induced acceleration of linear growth is brought to a standstill by epiphyseal maturation and closure. (This is in contrast to the *continued* epiphyseal growth which results from pituitary growth hormone.) In the case of steroid hormone-accelerated soft tissue growth, which may be measured by weight gain and by retention of the constituents of protoplasm (nitrogen, phosphorus, potassium and sulfur), this too levels off to a plateau and cannot be increased by any additional dosage of these hormonal agents (3).

In the female, gonadal function usually ceases in the mid-forties. There is considerable clinical evidence which suggests that the negative growth phenomenon known as the aging process proceeds at a somewhat more rapid rate following such cessation of gonadal function. Administration of anabolic steroids (estrogen and/or androgen) appears to inhibit some of the manifestations of the aging process (4). Despite this, however, there is little or nothing to indicate that life may be significantly prolonged (even though it may be qualitatively improved) by such hormonal treatment.

The precise functional status of the adrenals before puberty and after the menopause needs much clarification. It seems well established that the adrenal cortex *throughout life* manufactures significant amounts of cortisone-like material. Without such hormones, the individual is unable to make an adequate response to stress, and will perish if placed in an unfavorable environment. At the time of puberty, the adrenal cortex appears to manufacture a new hormonal substance, as yet unidentified chemically, which is growth-promoting and which, in the female, entirely controls the growth of sex-linked hair (axillary and pubic). The fate of this hormone following the menopause is in doubt. There is some evidence which suggests that normal production of gonadal steroids is essential to the normal production of this hormone; and that following cessation of gonadal activity the female adrenal approaches the pre-pubertal state, in which cortisone-like compounds are produced in relatively greater amounts than are anabolic steroid compounds. In favor of this hypophysis, might be cited the postmenopausal findings of a) gradually diminishing axillary and pubic hair, and b) skeletal demineralization similar to that found in the type of hyperadrenocorticism known as Cushing's syndrome, in which relatively or absolutely excessive amounts of cortisone-like compounds are produced.

That relative hyperproduction of cortisone-like materials is not the major answer to negative growth (aging) is well brought out by the pattern of aging

(usually premature) in the individual with negligible or no pituitary function, in whom cortisone-like compounds are essentially absent.

From the foregoing then, as of 1954, one may make certain reasonably positive statements:

1. Several hormones are concerned with growth, most of them in a positive way.

2. Of the known hormonal substances related to growth, a large body of reliable information is available in both humans and animals concerning the single or combined effect of anabolic and catabolic steroids hormones derived from the gonads and adrenal cortices. From this information, it would appear to be well established that neither the addition of, nor the withholding of, one or more of these compounds will to a major degree enhance the longevity of any normal individual.

3. The hormonal "lady of mystery" of 1954, is the pituitary growth hormone. As of this date no one has had pure growth hormone with which to work. Hence one may only speculate as to its exact role in the phenomenon which we call the aging process. Whatever the role, one may predict with confidence that the availability of this hormone in pure form will add significantly to our understanding of growth and senescence in the human subject.

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MANAGEMENT OF THE BURNED ELDERLY PATIENT*

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INTRODUCTION

The mortality rate following a burn in an aged person is very high. This has been emphasized by the recent statistical studies of Moyer (1) and of Bull and Fisher (2). Moyer pointed out that in the United States a burn of 13 per cent of the body surface carries a 50 per cent mortality rate in a person over 61 years of age. Bull and Fisher in their studies in England found that there was a mortality rate of 80 per cent following burns involving 15–24 per cent of the body surface in patients over 65 years of age, and that in the group with burns involving a larger area (25 per cent and over) the mortality was 100 per cent. This is in sharp contrast to the results in younger age groups as shown in Table 1.

The present study includes a review of the thermally burned patients 60 years of age and older treated at the University Hospitals of the State University of Iowa during the years 1949 to 1953 inclusive. The purpose was to determine the causes of death and, if possible, to ascertain what may be done to overcome the very high death rate.

STATISTICS

Thirty-four burned patients were included in this study. All had burns of more than 5 per cent of the body surface, of a third degree nature.[1] There were 15 deaths, or an overall mortality rate of 41.1 per cent. The number of patients per year and the mortality rates each year are listed in Table 2. The age distribution of these patients and the mortality in each age group are listed in Table 3. The mortality rate appears to climb sharply after the age of 70. Among those who died, the average third degree burn involved 23 per cent of the body surface area. One fatal burn involved 6 per cent of the body surface, and the remainder involved 15 per cent or more. Among those who lived, 25 per cent of the body surface was burned in 1 instance, and in the remainder the burned area ranged from 5 to 10 per cent of the body surface. The causes of death are listed in Table 4, along with the extent of the third-degree burned area, the duration of life after burning, and the age of the patient.

Over 66 per cent of the patients who died from burns had proven infarcts of one or of several organs. Three other deaths occurred in this series, and in 2 of them the presumptive cause of death clinically was pulmonary embolus.

* Presented at the Annual Meeting of the American Geriatrics Society, San Francisco, California, June 17–19, 1954.

[1] A third degree burn involves destruction of the entire thickness of the skin, including the skin appendages.

TABLE 1

Burned Patients—Mortality Rate by Age Groups
(after Bull and Fisher (2))

% Body surface burned	Mortality (%)	
	Age 15–44 yrs.	Age 65 yrs. & older
0–4	0.3	18.0
5–14	1.0	41.0
15–24	6.0	80.0
25–34	0	100.0
35–44	11.0	100.0
45 and over	62–100	100.0

TABLE 2

Mortality Rate in Burned Patients over 60 Years of Age, at State University of Iowa Hospitals

Year	No. of patients	Mortality (%)
1949	4	50.0
1950	5	40.0
1951	10	40.0
1952	4	50.0
1953	11	45.4

TABLE 3

Mortality Rate in Burned Patients, According to Age

Age	No. of patients	Mortality (%)
60–69	17	23.5
70–79	9	55.5
80 & over	8	75.0

However, no autopsy was obtained in these 2 cases. If they were included in this series, the incidence of infarction would be 93.3 per cent.[2]

FACTORS IN MORTALITY RATE

Stress plays a significant role. Whether this is the main difficulty is unknown, and whether the reaction in the aged is different from that in the younger patient is also unknown. However, burns cause severe stress; and in the aged this may

[2] Because the possibility existed that a high percentage of infarcts might be found in postmortem examinations in the aged, a study was made of the figures from our pathology department files for the years 1950 and 1951. All autopsies on patients 60 years of age and over were reviewed. In 1950, 40.3 per cent of these autopsies showed infarcts; and in 1951, 37.1 per cent. The figures quoted above, therefore, appear significant. During 1950 and 1951 four autopsies were performed on individuals below the age of 60 dying of burns or their complications. In only 1 was there evidence of infarction.

TABLE 4

Summary of Fatal Cases

Causes of death	% Body surf. with 3rd degree burn	No. days after burn until death	Age (yrs.)	Autopsy
Pulmonary embolus	20	27	79	*
Pumonary embolus (clinical diagnosis only)	6	65	82	no
Myocardial infarct; thrombosis circumflex branch left coronary artery; acute pericarditis; renal tubular damage with regeneration	25	33	78	*
Multiple infarcts of lungs; bilateral suppurative bronchopneumonia	15	47	89	*
Pulmonary embolus (clinical diagnosis only)	14	126	84	no
Pneumonia (clinical diagnosis only)	18	25	82	no
Splenic infarct; lobular necrotizing pneumonia	20	26	74	*
Infarcts of lung; suppurative pneumonitis with abscesses; pyelonephritis; decubiti	15	90	82	*
Acute dilatation of stomach; bronchopneumonia	20	58	65	*
Infarct of lung; pulmonary edema and pneumonia; fractured neck of femur; azotemia	15	9	76	*
Massive myocardial infarct; thrombosis left descending coronary artery	18	7	73	*
Pulmonary edema; necrotizing pneumonia; renal tubular damage	50	11	60	*
Multiple infarcts of spleen, lungs, kidneys; curling ulcers, multiple; bilateral acute bronchopneumonia	80	4	66	*
Thrombosis lateral sinus and confluence; thrombosis both iliac veins; splenic infarct; adrenal cortex exhaustion	20	44	80	*
Pulmonary emboli; lobular pneumonia; atrophy adrenal cortex	15	30	77	*

* Autopsy performed.

be of greater importance than in a younger patient. For example, in an 81-year-old woman with an almost completely successful graft for a burn of 20 per cent of the body surface, a series of eosinophil counts revealed a level consistently below 80 per cu.mm. The counts were begun on the sixth day after grafting, when the areas were almost completely covered with skin. The counts continued to fall, up to the time of the patient's death. Her course was continuously downhill, with low plasma protein levels in spite of repeated blood transfusions, feeding by means of a polyethylene naso-gastric tube, adequate urinary output, and a fair cardiac status. Venous thromboses and a splenic infarct developed. At autopsy, the histologic changes characteristic of severe adrenocortical exhaustion were also found. Low eosinophil counts in the burned elderly patient have been observed previously (3). In the patient described here, one would have expected a rise if she were convalescing normally.

From this study it appears that many factors may be operating to create the high death rate in burned patients. The problem of infarction is very interesting. There are suggestions that a burn in itself results in a tendency to thrombosis.

Pack (4) in an early summary of the pathology of burns stated, "A predisposition to thrombosis exists because of the leucocytic disintegration, the venous stasis, and the viscidity of the concentrated blood." However, he was referring to the early stages of the burn. He made no reference to infarction as a cause of death in those who survived the early shock period and neither did Harkins (5) in his monumental monograph on burns. In our group, all but 1 of the patients had survived this early period. It has been suggested that "sludging" of the blood may be a cause of thrombosis in burned patients (6); but this, too, occurs early. If "sludging" is observed experimentally, it is limited to small arterioles and venules. The occurrence of infarcts, however, may well provide a clue as to the nature of the pathologic physiology in these unfortunate patients.

When the charts in our series were studied it was evident that many patients had low blood counts throughout their hospital stay, often in spite of repeated blood transfusions. Others had what appeared to be an adequate blood count, but the plasma protein levels were extremely low. These findings strongly suggest that the blood volume was low in such instances. This was especially true when granulating surfaces had not been covered with skin because it was felt that the poor general physical condition of the patient did not permit any surgical procedures. Actually a vicious cycle was created, with further protein loss and probably further depletion of the blood volume. Along with the increased age, sclerosis of vessels, and diminished cardiac output, the additional burden of a depleted blood volume may very well play a leading role in the development of irreversible states.

MANAGEMENT

The newly burned geriatric patient, even if sustaining burns involving only 5 per cent of the body surface, should be treated vigorously to prevent shock. This is in contrast to the younger age group, in which such therapy is usually not required unless a burn comprises at least 10–15 per cent of the body surface. The danger of shock and chronic hypovolemia in the aged, with the greater danger of the patient showing irreversible deterioration, make vigorous treatment imperative.

During the early period (the first forty-eight hours after burning) the two great dangers are overloading the circulation and undertreatment. In the aged, the former is usually the greater hazard (7). It is inadvisable to use the hematocrit as a guide to fluid administration. The most practical and safe guide is the urinary output (8). By placing an indwelling catheter in the bladder and watching the hourly output of urine, the intravenous flow of fluids may be regulated without the danger of inducing pulmonary edema. The specific gravity of the urine should be determined as well.

Because of the marked red blood cell loss, administration of whole blood to combat shock is not only more effective than administration of plasma, but it prevents the severe anemia which otherwise occurs. Moreover, in the aged, a reduced blood volume is not uncommon (9). If severe trauma such as a burn is imposed upon such a person, the need for blood is even more acute. Blood

transfusion should be started immediately in order to prevent the onset of shock from which the elderly patient may never recover. A urinary output of 25–50 ml. per hour should be maintained. After administration of 500 ml. of blood, a combination of physiologic sodium chloride (400 ml.) and sixth molar sodium lactate (100 ml.) should be used. The saline-lactate mixture more closely resembles the electrolyte structure of extracellular fluid and is less likely to result in acidosis. Ordinarily, equal amounts of blood and of the saline-lactate mixture are used, but the quantity of the saline-lactate to be administered should rarely be greater than 1500 ml. in twenty-four hours; otherwise, there may be more edema. Whenever the patient can take fluids by mouth this route should be used to make up the electrolyte deficiency, in preference to the intravenous route. A mixture of 1 teaspoonful (4 ml.) of salt and 1 teaspoonful of baking soda in a quart of water will provide the proper concentration of electrolyte in fluid given orally, without the danger of fluid overload and consequent further edema. When intravenous administration is continued, sufficient 5 per cent dextrose should be given to keep the needle open and to maintain an adequate urinary excretion. If the urinary output is satisfactory and the specific gravity is low, the rate of fluid administration may be slowed. If the urinary specific gravity is high, the rate should be maintained or speeded. If the urinary output falls below 25 ml. per hour with a rapid rate of intravenous administration (120 drops per minute), it is a warning of impending shock, and blood transfusion should be restarted.

Intravenous fluids are unnecessary after forty-eight hours and should be stopped. At the end of that time diuresis will ordinarily begin if the patient is to recover (10). Further intravenous fluid will only subject the patient to the hazard of cardiac failure or pulmonary edema.

The longer the period between burning and grafting, the more difficult becomes the problem, because the sepsis, the severe anemia, and the prolonged protein loss are poorly tolerated by an elderly patient. To overcome this condition, there should be early debridement and grafting of the burns. To perform a debridement safely in an aged individual, satisfactory and adequate blood replacement must be available, otherwise irreversible shock may occur from the blood loss that inevitably takes place at the time of debridement. It may be advisable to carry out this procedure in successive stages over successive or alternate days, if the area is large. The debrided areas should be wrapped in fine-mesh petrolatum-impregnated gauze with pressure dressings or with fine-mesh gauze covered by dressings incorporating catheters and wrapped with elastic bandages. (Pressure dressings should never be put on so tightly as to impede circulation or respiration.) Irrigation of the catheters with physiologic saline is started twenty-four hours later. Ideally, the burned areas should be grafted immediately, but this may be too great an operative procedure. Usually, therefore, two days after debridement the patient is returned to the operating room and grafting is performed (using the thinnest of grafts), with a minimum of blood loss in the shortest operating time possible. This operation permits early coverage with skin and aids recovery. There has been a great tendency to

feel that the burned patient is too poor an operative risk to withstand debridement and grafting. On the other hand, can the patient withstand the continued nitrogen loss and general depletion of his reserves? The surgeon is faced with a tremendous mortality unless a vigorous approach is made. He should not wait until the fourteenth day or later but rather should perform the debridement on the seventh to tenth day, by which time the extent of the third degree burned areas should be recognizable. He should never wait for the burned areas to separate spontaneously, as this may take weeks, and during this time the patient will deteriorate and die.

Because of the severe stress the patient is undergoing, the necessity for adequate quantities of vitamin C must not be overlooked. This vitamin appears to be necessary for the metabolism and maintenance of adequate levels of adrenocortical hormones (11, 12). An amount approaching 500 mg. daily is indicated. Daily eosinophil counts are helpful. A decrease in the count, when the patient has not undergone any operative procedure, may serve as a warning to the surgeon of an impending complication (13). A persistent low eosinophil count after grafting undoubtedly has a dangerous prognostic significance.

The nature and cause of the prolonged blood loss in burns has never been fully explained. The loss can be stopped only when complete epithelization of the burned surface has been attained. The best method to overcome the severe anemia is by means of repeated blood transfusions.

The marked protein losses which ensue in these patients can best be overcome by covering the burned areas with skin rapidly and completely. Replacement of blood is the first necessity (14); then comes supplementation of the diet by formula feedings, and at times by means of a naso-gastric polyethylene tube. Again, caution must be observed. The development of a "pseudo" diabetes due to the augmented excretion of adrenocortical hormones may result in severe fluid loss accompanied by glycosuria (3). This may cause severe depletion of the blood volume. Shock, and possibly death, may ensue in the aged. Accordingly, such supplemental feedings are better given after ten to fourteen days have elapsed, rather than in the early period of massive response to stress.

The administration of testosterone, 75–100 mg. three times weekly, is often of value after the burned areas have been grafted, as it may help to bring the patient into positive nitrogen balance more rapidly. However, occasionally salt retention and edema occur, largely due to the effect of the steroid on renal tubular function, causing greater sodium reabsorption. In the aged patient with heart disease it may lead to cardiac decompensation. Therefore, close attention must be given to the patient during the administration of testosterone, in order to avoid this complication.

A rocking or tilting bed is useful for the patient who moves about at a minimum or sits infrequently in a chair. It helps in attaining positive nitrogen balance after the burned areas have been grafted.

Serious consideration should be given to amputation in an aged patient who has a severe burn of the lower extremities. The mortality from amputation is lower than the mortality rate from the usual procedures necessary in the treat-

ment of such a burn, *i.e.*, debridement and removal of skin for grafting. This may seem to be a radical approach, yet it may be the most conservative one from the standpoint of saving life.

SUMMARY

1. Mortality in the aged burned patient is very high and appears to increase with increasing age.

2. In the aged burned patient there is a high incidence of thrombosis and infarction.

3. The most effective means of dealing with these burns is earlier debridement and grafting.

4. Various phases of the problem of burns in the elderly patient are discussed.

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SIGNIFICANCE AND MANAGEMENT OF GENITAL PROLAPSE IN THE AGED*

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It is of the utmost importance that we have opportunities such as this to discuss matters which are our common interests. In my own practice, most elderly women who come to me with the operative lesions of prolapse are referred by internists and general practitioners. It is the geriatrist who, for the most part, makes the diagnosis, persuades the patient to submit to operation, and remains in the strategic position to predict the results and to direct the patient's future welfare.

There are considerations in this matter of prolapse quite aside from the usual pathology of the bladder and rectum.

Our common interest today deals with an inner and very subtle aspect of the pathos of the dilapidation of woman's femininity—femaleness is a stronger word. To any woman, the loss of her sexual potential, which is the common accompaniment of genital prolapse, is a blow at the bases of her power in life. It is a tragedy which writes "finis" to the most brilliant facet of her vanity; and the loss of a woman's vanity is a crippling stroke to her total psychic balance. It is this sequence which I shall discuss, under the conviction that it is possible to do much more to rehabilitate the woman as a whole and to rescue her from that cosmic embarrassment which is the result of these creeping mutilations of her body and her psyche.

Women of today have achieved a life expectancy averaging about 70 years. The "old" woman of 50 has become a rarity. The woman of 60 today, regardless of the number of children she has had, is usually a vital and vigorous individual who still looks forward to some of the very good years of her life. For the purpose of this discussion we shall not restrict ourselves to precise age groups, as one woman of 50 may be far more senile than another of 70. Kosmak (1) long ago pointed out that a woman, like a cardiac patient, must be treated more specifically in relation to her functional capacity and her vitality than in relation to any arbitrary age limit.

Among many others, there have been three excellent presentations before your own society on the subject covered by the title of this paper (2, 3, 4). These reports have been, however, devoted mainly to documenting the safety of surgery (even radical) in elderly women. This factor has been made sufficiently clear to all concerned, except perhaps to the patients themselves or to their families.

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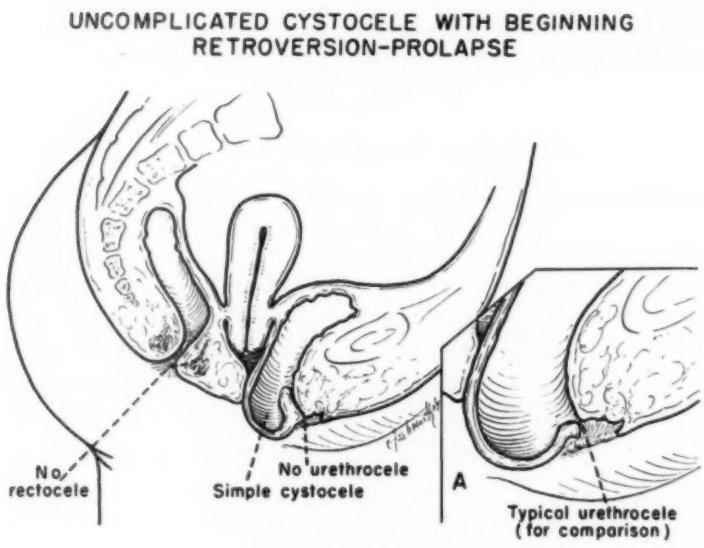

FIGURE 1

THE ANATOMIC DEFECTS ASSOCIATED WITH GENITAL PROLAPSE

For review purposes, a brief discussion of the more common anatomic defects found in cases of genital prolapse in elderly women is of interest. It must be borne in mind that these are almost without exception the delayed results of trauma during childbirth many years before.

Simple cystocele as shown diagrammatically in Figure 1, is apt to be more of a mechanical nuisance than anything else. If it is large and protrudes extensively, or if it is of the pocket variety, it is frequently the cause of mechanical discomfort from pressure, or from irritated areas of the exposed mucosa. There may be occasional recurrent bladder symptoms. The patient is often unable to empty the bladder satisfactorily, and chronic cystitis may result. Dyspareunia and unsatisfactory sex function are common accompaniments. For purposes of comparison, insert A in Figure 1 depicts cystourethrocele.

Urethrocele is occasionally, but not often, independent of cystocele. It generally occurs in conjunction with cystocele, as depicted in Figure 2. The urethral component, which is roughly illustrated, immediately introduces problems relating to urinary control *i. e.*, difficulty in starting and stopping, dribbling, and (most important) incontinence, which generally assumes the form of so-called stress-incontinence. These women also are often bothered with recurrent cystitis or urethritis, for obvious reasons. Insert A in Figure 2 depicts cystocele without urethral damage.

Rectocele varies from the small pocket variety to the medium sized herniation depicted in Figure 3. Interestingly enough, the more frequent symptomatic difficulties are associated with the smaller pocket rectoceles like that shown in insert A in Figure 3. This type is generally situated above a partially adequate perineum and anal sphincter. The symptomatology here involves the type of mechanical constipation which the patient has often learned to overcome by using the finger to push back, compress and evacuate the saccular protrusion,

CYSTO-URETHROCELE
(With loss of urethral canal to external sphincter)

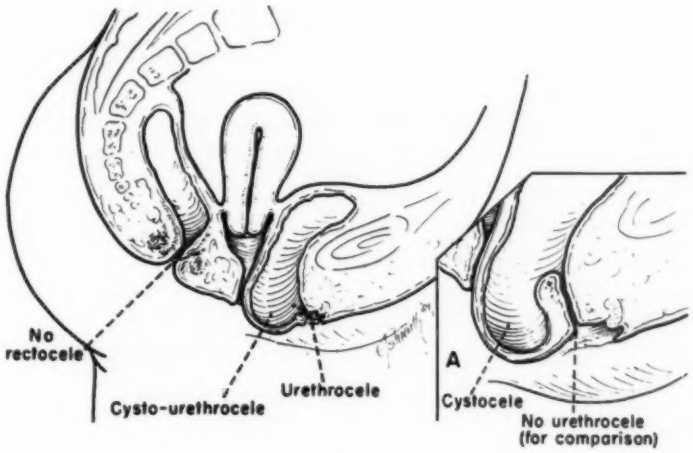

FIGURE 2

SIMPLE RECTOCELE WITH DAMAGED SPHINCTER

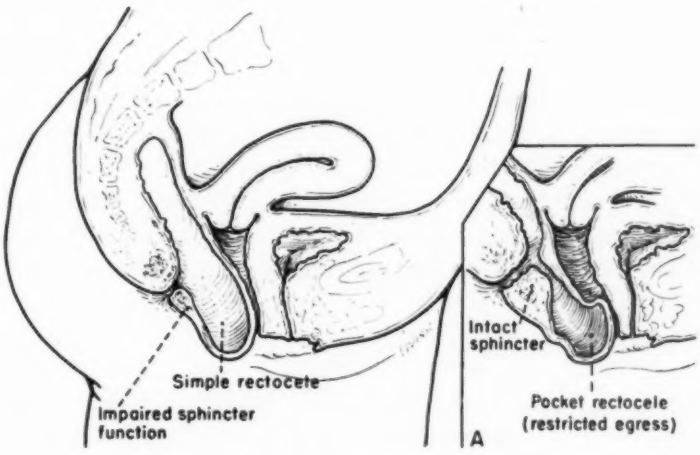

FIGURE 3

thus facilitating the emptying of the entire rectum. Again, unsatisfactory sex function is common.

Thinning and scarring of the perineum, with varying degrees of lack of sphincter control, are common components of the general picture of rectocele. On occasion they may cause functional difficulties in need of surgical treatment, even in the absence of demonstrable rectocele.

High rectocele is not uncommon; and enterocele, a true hernia between the uterosacral ligaments and through the posterior cul-de-sac, is occasionally noted. Enterocele is a more formidable manifestation and its repair must be given special surgical consideration outside of this assignment.

Uterine prolapse of varying degree is almost always associated with anterior-

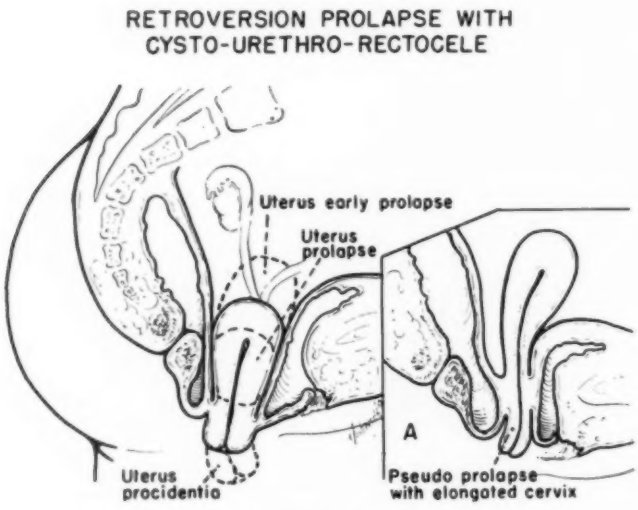

FIGURE 4

wall hernia and also with primary or secondary retroversion. Retroversion is a very common accompaniment of any of these defects and may be an important factor in the etiology. Figure 4 indicates diagrammatically the varying degrees of prolapse, ranging to and through the procidentias. General, as opposed to local symptoms encountered in female genital prolapse are in a greater degree due to sagging of the uterus and adnexa than to vaginal herniations. Pelvic congestion, bearing-down sensations, true dyspareunia, backache and asthenia are the chief complaints. In any case, if the uterine prolapse is mild, it must be stopped; if advanced, it must be corrected. The degree of prolapse, therefore, becomes the differential factor in most cases in the selection of surgical procedure. It must be kept in mind that apparent prolapse, as illustrated in insert A in Figure 4, may not be *true* prolapse.

TREATMENT

The use of pessaries in this era of good and safe surgery, has virtually reached the vanishing point. Modern, well designed pessaries[1], carefully fitted and meticulously supervised, may be of temporary benefit, but they carry dangers and inconveniences of their own and the psychology of the pessary is one of complete defeat. Of all the factors which contribute to the patient's humiliation in such circumstances, the pessary is the prime offender. It is at best temporary, ineffective and offensive; but it does have its occasional indication.

The operative method for the correction of cystocele is selected by the surgeon on the basis of the degree of bladder hernia and of the accompanying uterine prolapse. If the uterus is severely prolapsed (as in the dotted-line uterus designated "procidentia" in Figure 4) and is easily available through the vaginal canal, a vaginal hysterectomy is often the operation of choice. Under such circumstances, a vaginal hysterectomy is scarcely more difficult or dangerous than

[1] Milex Products, Chicago 18, Ill.

the more conservative methods of surgical treatment. In my own experience, it is not often necessary or advisable to remove the uterus. In the first place, what appears to be prolapse in many of these cases is not really prolapse but (as shown in Figure 4) a tremendously elongated uterine cervix—sometimes as long as 3 inches. This type of cervix may be involved in an extensive first-degree procidentia, leaving a small uterus still well attached in its ordinary position. It is a serious mistake to perform a vaginal hysterectomy routinely in these cases, because the remaining uterus, if properly treated, is the best possible surgical insurance against future or recurrent prolapse including enterocele. If the referring physician has recognized only the *apparent* prolapse in such a case, and has specifically advised a vaginal hysterectomy, there may be some misunderstanding later if the prescribed operation is not carried out. Furthermore, I have known patients to assume a critical attitude in these matters on the basis of the Readers' Digest or Ladies' Home Journal type of documentation. It is my own opinion that vaginal hysterectomy is performed more often than it should be, and at the expense of sound tissues which could be used for rehabilitation.

The advancement operation is the procedure of choice in most cases. The anatomic result is shown roughly in Figure 5 (point + on the bladder is advanced to point + on the lower uterine segment).

The Manchester operation (Fig. 5, insert C) is a convenient supplement, which accomplishes a similar result and at the same time disposes of a long and cumbersome cervix. There are a dozen different variations which may be used to achieve excellent operative repair of these herniations. Referring physicians should realize that the best gynecologic operations in this field are performed by the

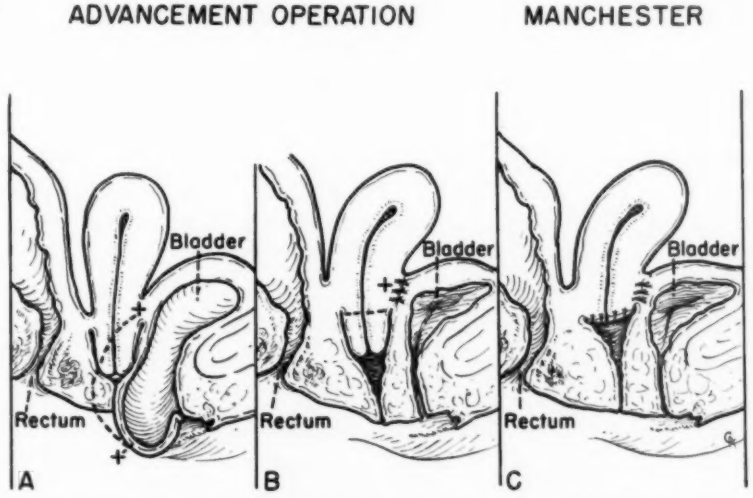

FIG. 5. (**A**) Cystourethrocele without rectocele, as depicted in Figure 1. Note the two points marked +. (**B**) Effect on bladder of the advancement operation. The two points marked + in section A have been approximated by lifting the base of the bladder and attaching it to the lower uterine segment. The portion of the cervix to be excised is indicated by dotted lines. (**C**) The advancement operation has been performed. This is a rough description of the Manchester operation.

surgeon who adapts the surgical procedure to the precise needs of the tissues as they unfold before him in the course of his dissection, and does not operate by any preconceived routines, or name-technics.

When repairing a cystocele, one must routinely repair an existing urethrocele. If the latter is not present, the possibility of its later occurrence must be borne in mind. Advanced grades of urethrocele which result in stress incontinence are very much in the surgical limelight at the moment. It should be reassuring to know, and conservative authority supports this opinion, that elaborate muscle and fascial operations and suprapubic procedures are actually not often necessary. A competent surgeon, who has taken sufficient time to give careful attention to the surgical needs in reconstructing the urethral base by the vaginal route, will seldom have to undertake this more dramatic surgery. It is good to know that these technics are available for unusual situations, and that almost none of them is particularly difficult or dangerous. It is regrettably true, however, that at the moment the newer and fancier technics have been given unwarranted publicity.

The surgical repair of rectocele and the scarred and inadequate perineum and sphincter do not need description here. Unfortunately, too often even now, the occasional operator does not carry his repair sufficiently high, and casual surgeons in this field are not always conscientious in the approximation of the deeper muscular and fascial layers of the pelvic floor. Patience, skill and experience are required, not only to correct the anatomic defects, but also to adjust the vagina precisely to the physiologic requirements of the patient and her husband. A proper posterior-wall repair may be a considerable and an exacting surgical operation and must be performed with great care.

The total role of pelvic surgical procedures in prolapse of the female genitalia should be to re-establish an anatomic basis upon which the woman can rebuild her normal female physiology and psychology. Bladder and rectal functions are too often considered as the end-points of operation, to the exclusion of the other functions of this area. The miraculous total restoration which is the goal in such situations is often not accomplished, chiefly because of psychologic factors. We are too prone to neglect the proven fact that many women past 50 or even past 60, who have never been deprived of the integrity of their sexual apparatus, can and often do perpetuate a ripe and rewarding psychosexual maturity. My impression is that if physicians were sufficiently aware of this potential, many prolapse patients could be rehabilitated in more generous measure. A woman is only as old as the quality of her spirit, and her functional quotient. Obviously then, when we have corrected the major mechanical defects, we must face the problem of helping the patient and her husband to reappreciate her renewed capabilities.

Too many of these patients, when first seen, are in an advanced and helpless state of pseudosenility. Most of them do not appreciate the extent to which they can recover until months after the defects have been repaired. Much of the later appreciation which comes to the surgeon is from women who, preoperatively, did not consider that there was much of anything organically wrong with them.

In relation to the sex potential, serious mistakes are constantly being made by over-zealous surgeons. From sad experience I have made it a dictum *never* to

take for granted that a woman may not be further or again interested in her marital relation. We are all aware of the almost incredible sexual performances of individuals whom we have mistakenly put on the shelf functionally. The physician in charge of these elderly patients must pay meticulous heed to the remotest possibility of the desire for late sexual activity. Unphysiologic degrees of vaginal closure such as that involved in the Le Forte operation should be employed only when such a procedure is the only one which will restore the basic functional necessities. Often surgical convenience indicates ablation, and to restore such a vagina to functional capacity may indeed be a difficult undertaking. Nevertheless a sincere effort to preserve function is called for, even at the risk of minor inadequacies in other respects. A complete ablation can be performed later if it becomes essential, and such an operation is usually a simple one. Only rarely should it be necessary to state in advance, and to require an agreement to the fact that correction of the prolapse will bring to an end the patient's sexual activity.

Another matter may be important in relation to the elderly patient who has finally made up her mind to undergo a plastic pelvic operation. The type of woman who most often submits herself for surgical treatment has been a hearty, vigorous, self-forgetful and generous mother and grandmother of many offsprings. These are mostly the household workhorses who have created for themselves an almost intolerable round of obligations to their husbands, their children and their children's children. These people should be urged to make of the pelvic operation a turning point. The month to six weeks required for complete recovery can be strategically converted into a period of enforced solicitude by the patient's family. If she is shrewd and if the doctor is helpful, she may create a situation from which she can achieve a different and more humane status in the family work-program.

There may seem to you to have been too small a kernel to the nut I have cracked for you today, but in closing I submit that if there are legitimate psychologic gains to be made by surgery which lifts the drooping cheek of 50, or tilts up the flagging bosom of 60, then there is more meat to my argument in favor of rehabilitation which includes actual and asthetic consideration of far greater significance. We must never forget that a woman remains a woman from her first ovulation to her last breath.

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ELECTROSHOCK TREATMENT IN INVOLUTIONAL AND SENILE PSYCHOSES*

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The personality changes which frequently take place during involution and senescence are both distressing and debilitating. Unfortunately, most of the patients undergoing these changes do not lend themselves to psychotherapy except on a very superficial level, as their personality patterns are deeply rooted. About 40 per cent of all persons admitted to state hospitals are in these classifications. Usually they are not certified to psychiatric care except as a last resort, many of them being kept at home and their eccentricities endured for sentimental reasons. Any technic which will aid in stabilization and prevent the necessity of institutionalization is a psychiatric advance.

The geriatric problem is in great part dependent on organic changes which take place during the decline of life, but it should also be realized that emotional stability plays a significant role in determining the type of personality reaction that will develop. The ability of the aging patient to adjust to the changing environment is an important factor.

DIAGNOSIS

In a series of 3,817 patients referred for private psychiatric attention, 458 (12 per cent) were from 45 to 80 years of age. Of this number, 29 per cent were males, and 71 per cent were females.

Involutional reactions occurred in 66 per cent of these 458 cases, but the degree of personality disintegration and failure to adjust to the environment did not appear to depend on any definite organic change in the brain tissue. The condition was characterized most commonly by depression, without a previous history of manic-depressive reaction (which had occurred in 7 per cent of the 458 patients). An involutional psychosis was usually found in individuals of compulsive personality type, and 14 per cent were basically schizoid. The illness was manifested by worry, intractable insomnia, guilty feelings, anxiety, agitation, delusional ideas, and somatic concern. Some cases were characterized by depression, and some by paranoid ideas; the somatic preoccupation was at times of delusional degree. Such a reaction tends to have a prolonged course if not treated.

Senile and arteriosclerotic psychoses were found in 27 per cent of the 458 patients. There were some who had mild organic brain changes, but in others tissue deterioration was severe. Irrespective of the organic pathologic picture, they showed self-centering of interest, a paranoid trend, difficulty in adjusting to new experiences, irregular sleeping pattern, and childish emotionalism, with

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steady deterioration. There was usually some disturbance of memory, judgment, orientation and comprehension.

TREATMENT

Although the organic deterioration is irreversible, the personality regression may be arrested, or even corrected, for various lengths of time. These patients can be treated on an ambulatory basis by the use of electrical shock, and there are practically no contraindications to this form of therapy. The treatment is not a permanent cure, since the patients do not gain insight. Nevertheless they can be kept adequately functioning by occasional maintenance treatments.

Methods

Various machines (1, 2) may be used for shock treatment, the most common being one which delivers an alternating current of from 100 to 2,000 milliamperes, with the machine marked to deliver 0 to 140 volts at a rate of 0.1 to 0.6 per second. Usually 100 to 140 volts at 0.4 to 0.5 per second is the dosage required to set off a convulsion. This may be given through the frontal lobes, either with an instantaneous shock, or by gradually building up the current (glissando) prior to the convulsive dose. A newer technic known as electro-stimulation (1) uses a current between 2 and 4 volts, passed through the mid-brain. The convulsion may be set off with 15 to 20 milliamperes, followed by rhythmic stimulation with 1.5 milliamperes. This minimum stimulation offers an advantage, in that the respiratory and cardiac centers are stimulated after the convulsion. Thus apnea and circulatory embarrassment are not so apt to occur as with the higher voltage.

Results

Among the 458 patients treated, the average number of treatments per patient was 7.75. Those in the age group between 45 and 60 required an average of 8.14 treatments each, whereas those in the group between 61 and 80 required an average of 6.69. None of the patients showed definite improvement until there had been at least four treatments, although there was frequently a very marked change in the picture following the first dose, and the relatives frequently stated that it was a "miracle." The first four treatments were usually given on consecutive days. After that, the current was applied every other day until maximum improvement was reached. By the fourth treatment the patient was usually sleeping without difficulty and without sedation, and the appetite had improved. Paranoid ideas were seldom renounced until after the fourth treatment. Additional therapy was given if necessary. If the patient remained symptom-free for a period of two weeks following the last treatment, then the condition was likely to remain stable for an indefinite period.

The 458 patients showed a recovery rate of 84 per cent following ambulatory treatment. The overall rate was 86 per cent when account is taken of 66 patients who had started treatment but who had to be admitted to the hospital; 11 of these were later discharged. These persons were able to carry on at home and to live

essentially normal lives for periods ranging from one month to seven or more years. Of the 86 per cent who reached this status, only 30 patients (6.5 per cent) had a relapse within the period of observation (almost eight years) and only 1 had a relapse within a month. The majority remained well for at least one year.

Complications

Unfortunately, electroshock therapy may cause an aggravation of symptoms, especially during the first few treatments; and since the relatives have usually endured a long period of disturbance, they feel that they cannot endure the situation any longer and insist that the patient be certified to a psychiatric hospital. In the group aged from 45 to 60 this occurred in 13 per cent of the patients, and in the group aged from 60 to 80 it occurred in 17 per cent—a total of 66 commitments. However, among all the 3,817 patients who were referred, certification occurred in only 3 per cent. Of the 66 patients admitted to the hospital, no attempt was made to determine if the treatments given prior to certification helped them in their later progress, but at least 11 patients were later discharged from the hospital as able to carry on at home.

Since many involutional and senile patients are depressed, they are potentially suicidal. It was frequently for this reason that the family was finally forced to seek psychiatric care. In spite of the fact that family members were always warned of the potential danger of suicide in such patients, they at times did not keep the patient under adequate surveillance; as a result, 0.67 per cent committed suicide. One of the advantages of electroshock treatment in these individuals is that the idea of suicide is one of the first compulsions that the patient gives up.

The most common complications resulting from shock treatment are headache, muscle soreness, and fracture. The latter generally occurs as a compression fracture of one or two of the vertebrae, usually the fourth thoracic (3). In this series of 458 patients between 45 and 80 years of age, fracture was clinically demonstrated in only 3 cases—one woman 56 years of age; and two men, 48 and 52 years of age, respectively. No orthopedic treatment was required. One death occurred—a woman of 58, who was extremely adipose and accepted as a poor cardiac risk.

CASE REPORTS

Mrs. C. A. was an 80-year-old woman with "inoperable" cancer of the intestines. For over a year she had been in a severe depression since she had been told she had cancer. She frequently cried, and her family were fearful of leaving her alone because she was suicidal. When referred, she had a blood pressure of 260/180 and it was felt she was a poor cardiac risk, but the family would not consider hospitalization. After four electroshock treatments by minimum stimulus, she recovered from her depression, her blood pressure decreased to 180/100, and her family felt she was able to resume her normal routine. Three years later her condition was still stable.

Mr. R. G., a 50-year-old man, was married and had one child. He was definitely schizoid. He had two electroshock treatments and then attempted suicide by slashing his wrists. He was given two more treatments and recovered from his depression. This was in 1950. During the next nine months everything went smoothly and then he had a relapse in 1951.

After eight more treatments depression was arrested, and up until the middle of 1954 he was still well.

Mrs. D. C. was 45 years of age in September 1952, when she was referred because of depression and many somatic delusions. After four treatments she became her normal self, but in November she had a relapse. After two more treatments she again became normal. In March 1953 another relapse required two treatments; in May a relapse required ten treatments; and in September a relapse required eleven more treatments. She got along well until March 1954, when she required five additional treatments to recover her stability.

DISCUSSION

At least 86 per cent of the 458 patients suffering from involutional, arteriosclerotic, and senile psychoses were definitely benefited by electroshock treatment and were able to carry on in a satisfactory manner at home (4). This confirms the report of Prout and Hamilton (5), who found that in their series of 104 patients, 87 per cent were benefited by treatment, and 85 per cent were able to live at home. Our findings also support the conclusions of Karliner (6), that hypertension, abnormal electrocardiograms, a history of angina pectoris, coronary thrombosis or inactive rheumatic heart disease with valvular lesions, are not contraindications to electroshock therapy. Agitation and excitement may put more strain on the heart than the shock treatments. In our series of patients a cardiac examination was made before each treatment, and in cases of hypertension there was always a definite decrease in the blood pressure following treatment.

Dewald, Margolis and Weiner (7) in a detailed x-ray study of 68 men and 195 women, ranging in age from 14 to 76, found a fracture incidence of 20.8 per cent. The rate in the men was 42.9 per cent and in the women, 13.7 per cent. Those who were over the age of 60 showed a fracture rate of 9.72 per cent. Our series was not studied by routine roentgenograms, but among the 458 patients between the ages of 45 and 80, there was a clinical fracture rate of 0.67 per cent, and in the 50 patients between the ages of 60 and 80 no fractures were found. In our younger patients (under 45 years of age) there was a higher percentage of fractures. It is evident that muscular tension is a predisposing factor towards fracture, and in such cases the use of muscular relaxants should be considered. They should be used with extreme caution, however, especially in ambulatory patients.

SUMMARY

1. Of 3,817 patients referred for psychiatric attention, 458 were between the ages of 45 and 80; 29 per cent were men, and 71 per cent were women.

2. Among the 458 patients, in 66 per cent the diagnosis was involutional reaction; in 7 per cent, manic-depressive reaction; and in 27 per cent, arteriosclerotic or senile psychosis.

3. These patients were given from one to sixteen electroshock treatments (average, six to eight). Most of them showed no improvement until they had had at least four treatments, but many were stabilized after four treatments.

4. The most common complication from electroshock treatment in this series

was vertebral fracture; it was noted clinically in less than 1 per cent of the patients, although the rate was much higher in younger and more muscular patients.

5. There was an 86 per cent recovery rate. Only 14.8 per cent of the 458 patients had to be certified for hospital treatment, in contrast to the usual state hospitalization rate of 40 per cent for such patients.

6. In 6.5 per cent of the 458 patients stabilized by electroshock, there was relapse, and necessity for further treatment.

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MEDICAL AND SURGICAL MANAGEMENT OF DIVERTICULITIS IN GERIATRIC PATIENTS*

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Diverticula of the colon are frequently found in the course of "survey" barium enema studies. As more patients reach geriatric age, the problem of handling the complications of diverticula of the colon will become more common.

In diverticulosis coli, as in many other disease conditions, establishment of the diagnosis will enable the clinician to educate the geriatric patient in prevention of the complications. "Survey" barium enema studies are indicated in all geriatric patients who have even mild symptoms referable to the colon.

INCIDENCE

In a review of a ten-year experience at Henry Ford Hospital there were 2,162 patients indexed with diverticula of the colon. In 169 (7.8 per cent) the diagnosis was diverticulitis. Of these, 124 (5.7 per cent) were treated medically and 45 (2.5 per cent) were treated surgically. The period of ten years (1944 through 1953) included the era in which antibiotics came into general therapeutic use. The hospital registrations in this decade (excluding pediatric patients) approximated 163,000; thus the ratio of cases of diverticulitis of the colon to hospital admissions of adult patients was 1:911.

Of the 124 patients treated medically for diverticulitis, 63 were over 60 years of age, with an average of 60.2 years for the group; 30.6 per cent were in the seventh decade of life and 19.3 per cent in the eighth decade. In an earlier report from our clinic (1) 21.3 per cent of the patients were in the seventh decade and 4.3 per cent in the eighth decade. Thus our experience indicates that there has been an increase of diverticulitis as the age of the patients has increased.

Horner (2) reviewed a ten-year experience in office practice. Of the patients in whom the barium-enema x-ray diagnosis of diverticulosis coli was made, 32.1 per cent were in the seventh decade of life and 22 per cent in the eighth decade. These percentages correspond closely to those in our review of diverticulitis in the same age groups. Horner's series of diverticulosis coli patients presented 56.6 per cent above the age of 60 years. He noted "diverticulosis patients contribute a disproportionately large percentage to the advanced decades."

McGowan and Wolff (3) noted the changing age pattern. In their series the patients had an average age of 61.4 years, and the greatest incidence was in the seventh decade. They concluded that "diverticulitis has changed from a comparatively rare disease to a quite common one."

The many theories of the etiology of diverticulosis seem compatible with the physiologic changes of age, such as weak areas at the point of penetration of

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blood vessels, herniation of diverticula into appendices epiploicae, and fatty infiltration of musculature of the bowel wall.

CLINICAL FEATURES

Of the 124 patients treated medically for diverticulitis, 68 were males and 56 were females, in conformity with the usual higher incidence in males (1, 2). One hundred patients (80 per cent) had only a single attack of diverticulitis; 12 had two episodes; 6 had three episodes; and 6 had four or more attacks. Onset was either acute or of less than one year's duration in 91 patients; 11 patients had symptoms for less than two years; and the remaining 22 patients had symptoms for from three to twenty-five years.

Table 1 outlines the presenting symptoms of these 124 patients. Symptoms were usually multiple. It was surprising that 80 per cent of the patients were seen in an acute and single attack. There was frequently a history of the ingestion of an unusual dish, such as "raspberry pie" or "honey comb." Many patients were awakened at night by lower abdominal pain after the self administration of an enema at bedtime. There was a relatively low incidence (6.5 per cent) of urinary symptoms in the patients under medical management as compared with that in the surgical group (7 patients with vesico-colic fistulae in 45 patients (Table 4)). This indicates the potential gravity of such urinary symptoms when present.

Table 2 presents the clinical signs in the patients managed medically. Gross melena occurred in 5 per cent of the patients, but in all instances hemorrhoids

TABLE 1

Symptoms

Lower left quadrant pain	74	(60%)
Lower left and right quadrant pain	88	(71%)
Lower right quadrant pain only	5	
Epigastric pain	5	
Upper left quadrant pain only	1	
Constipation	35	(28%)
Constipation alternating with diarrhea	21	(17%)
Generalized abdominal cramping pain	30	(24%)
Nausea or vomiting	44	(35%)
Urinary symptoms	8	(6.5%)

TABLE 2

Clinical Signs

Tenderness in lower left quadrant	87	(70%)
Palpable mass	27	(21%)
Generalized rebound tenderness	6	(5%)
Melena	6	(5%)
Fever over 100°F	50%	
Fever over 101°F	25%	
Leukocyte count above 12,000	31%	

TABLE 3

X-ray Diagnosis		
Sigmoid only	67 (54%)	
Sigmoid and descending colon	29 (23%)	
Total		96 (77%)
Generalized in colon	25 (20%)	
Ascending and transverse colon	1	
Splenic flexure	1	
Previous X-ray Diagnosis	1	

were suspected as the source of bleeding. Barborka and Textor (4) emphasize that bleeding in the presence of diverticulitis requires a careful search for other causes.

The x-ray localization of diverticula in the 124 cases of diverticulitis are presented in Table 3. The patient with x-ray evidence of diverticula in the ascending and transverse colon had symptoms of alternating constipation and diarrhea, leading to the suspicion that diverticula were present in the sigmoid; but these were not demonstrated successfully. The patient with diverticulitis in the splenic flexure also had x-ray evidence of obstruction of the small intestine, which was relieved by intubation with the Miller-Abbott tube.

Thirty patients had x-ray evidence of bowel obstruction. Twenty of these had obstruction of the small intestine, frequently interpreted as reflex ileus, and 10 had obstruction of the colon. In addition, 3 patients were considered to have clinical signs of partial bowel obstruction, but this was not confirmed by x-ray examination.

An abscess resulting from a ruptured diverticulum occurred in 3 of the patients managed medically, and fistulous tracts developed in 3 additional patients.

MEDICAL MANAGEMENT

The medical management of diverticulitis of the colon corresponds to the management of any infection in the abdomen. Absolute bed rest is indicated, with a liquid or low-residue diet during the acute infection. The majority of patients in our series were treated with phthalylsulfathiazole (Sulfathalidine®, Sharp & Dohme) orally (4 grams daily), penicillin and streptomycin by injection. Liquid petrolatum is indicated if severe constipation or partial obstruction is present. The antispasmodics most commonly used were the belladonna alkaloids and, more recently, methantheline bromide (Banthine®, Searle & Co.) for diarrhea, but their effects were equivocal.

The most important complication during medical management was partial or temporary bowel obstruction. In the medically treated group 33 patients (26 per cent) had partial obstruction of either the large or the small intestine. These patients were intubated with the Miller-Abbott tube. Heat was applied to the abdomen by stupes and medical management continued as outlined. There were no fatalities. The patients with partial or temporary obstruction were hospitalized for an average of 13.4 days, compared with the average hospital stay of 8.7 days for all patients under medical management. The morbidity

of the disease was increased by the complication of obstruction. Patterson (5) found that in 7 of 23 fatalities from diverticulitis of the colon there was a diagnosis of obstruction of the small intestine with extensive peritonitis. Patients with clinical signs of obstruction should have an abdominal x-ray examination for signs of free air and peritonitis. If these are present surgical intervention is indicated. When the ileus is of a reflex type, conservative management has been successful.

In geriatric patients the prevention of recurrences is of outstanding importance. This is best effected by education of the patient. Diverticula of the colon can be simply explained by the physician as a mechanical problem. Often it is wise to demonstrate the x-ray appearance of these sacs to the patient. A bland diet with avoidance of seeds and vegetable fibers is outlined. The patient is instructed to use care with enemata. Figure 2 shows the rupture of a diverticular sac after an enema. If symptoms recur, periodic courses of Sulfathalidine® are given in doses of 4 grams daily for three consecutive days.

CASE REPORT

W. B., a 64-year-old white male, who had been previously in good health, awakened at 2 a.m. with diffuse abdominal cramps. He had taken a proprietary cathartic and an enema the evening before. Thirty-six hours later a globular mass presented in the lower left quadrant of the abdomen associated with cramping intermittent pains. His temperature was 101.6°F. The leukocyte count was 18,900, with 89 per cent polymorphonuclears.

In Figure 1 may be seen the air distention in his colon and the 'stepladder' obstruction of the small intestine. Figure 2 shows the x-ray findings twelve days later, following a barium enema. There is an abscess above the sigmoid colon.

The patient was treated conservatively with intubation, hot stupes, Sulfathalidine®, penicillin and streptomycin. Two months later, upon barium-enema x-ray examination, sigmoidal diverticula and spasm were noted, but there were no residual signs of the abscess. Figure 3 shows his colon five years later; there is a florid diverticulosis of the sigmoid. No subsequent complications have occurred.

SURGICAL INDICATIONS AND RESULTS

The complications of diverticulitis which required surgical intervention in the ten-year period of this study are given in Table 4. Operations were performed only for conditions which would not respond to a medical program in a satisfactory manner. In the 6 cases listed as "possible malignancy" there was evidence to support a diagnosis of cancer, and in 2 of these a malignant growth was found. It has been emphasized that when malignancy is suspected, resection should be performed as soon as possible (6).

The types of operative procedures used in the 45 patients are shown in Table 5. Primary resections were performed only in the quiescent period and when the bowel to be anastomosed was healthy. Two-stage procedures were carried out chiefly when there was some suspicion of malignancy; and resections with a complementary proximal colostomy were performed in order to obviate undue delay. In the 2 instances in which the colostomy was closed, the patients had other problems, so that an attempt was made to avoid resection; although this procedure may occasionally be temporarily successful, it is certainly not to be

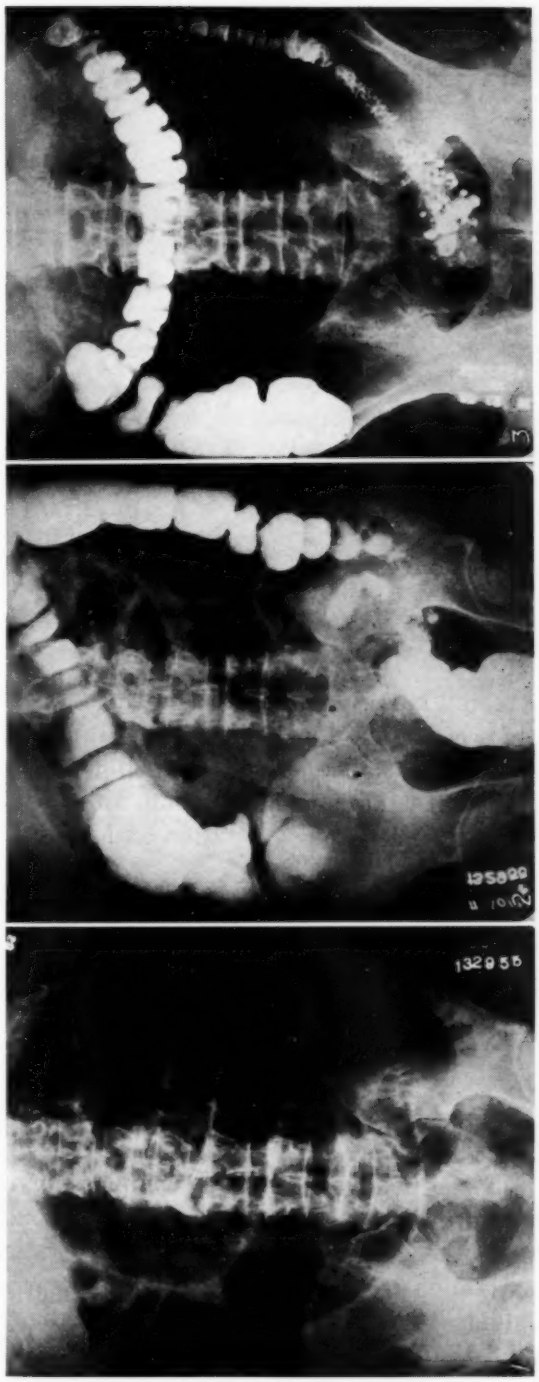

FIG. 1

FIG. 2

FIG. 3

FIG. 1. 'Stepladder' obstruction of small intestine with air in the ascending colon.
FIG. 2. Abscess above the sigmoid colon from perforation of a diverticulum.
FIG. 3. Florid diverticulosis of the sigmoid colon five years after conditions shown in Figures 1 and 2.

TABLE 4

Complications Requiring Surgical Treatment

1. Free perforation	2
2. Abscess	7
3. Fistula	
vesico-colic	7
recto-vaginal	3
abdominal wall	2
colo-colic	2
4. Obstruction	10
5. Recurrent stenosing diverticulitis	10
6. Possible malignancy	6
7. Hemorrhage	1

TABLE 5

Surgical Procedures—45 Patients

1. Primary resection	8
2. Colostomy	37
A. Three-stage (resection)	25
B. Two-stage (resection)	10
C. Closed, without resection	2

recommended. We have seen 2 patients in whom fistulae to the abdominal wall developed after closure of a colostomy for diverticulitis without resection.

In this series there were 3 deaths. One patient aged 80 died following a colostomy, and the other 2 died from pulmonary emboli while receiving heparin therapy. One of the latter had a one-stage operation and the other had a two-stage operation.

In 10 of the 45 surgical patients phlebothrombosis developed postoperatively—an incidence of almost 25 per cent. Diverticulitis may readily cause some obstruction of the venous return from the extremities, and the flow may be further diminished by the resection. Phlebothrombosis is a complication to be watched for and promptly treated.

DISCUSSION

General surgical considerations

Surgical intervention is usually indicated in such complications of diverticulitis as perforation, abscess formation, obstruction, fistula formation and, less frequently, hemorrhage. Another important indication for operation arises when it is impossible (by barium-enema x-ray and sigmoidoscopic examinations, history, and physical findings) to rule out a co-existing malignant condition. Surgical procedures should also be considered for a group of patients in whom the disease has had a course with frequent repeated attacks and a progressive pattern, in spite of a good program of medical management. The selection of the surgical method for handling the complications depends on the condition of

the patient and of the lesion and surrounding bowel. The procedure of choice in most patients, especially those in the geriatric group, is a colostomy for the purpose of diverting the fecal stream for several months before resection of the lesion.

Perforation

Perforation of a diverticulum which is acutely inflamed will give all the signs of acute spreading peritonitis, and often of subdiaphragmatic free air. When perforation occurs into the general peritoneal cavity, obviously a surgical emergency exists. Adequate drainage must be instituted, and the perforation site must be closed if it is readily accessible. In either case, an accompanying transverse colostomy is made in the right upper quadrant of the abdomen. The procedure of exteriorization in the Mikulicz manner has not been used by us in recent years. The decision to drain a localized abscess may be postponed temporarily, in order to determine the results of antibiotic therapy.

Obstruction

In acute diverticulitis, the edema and swelling which produces the obstruction will almost always subside with conservative therapy, so that operation is not indicated immediately. Chronic recurring diverticulitis requires surgical intervention, because the chronic inflammation results in severe stenosis of the bowel lumen. There are symptoms of partial obstruction of the large bowel, and a barium-enema x-ray examination will reveal the site and extent of the obstruction.

Episodes of acute inflammation with partial obstruction and localized pain and tenderness are often superimposed upon the condition of chronic diverticulitis.

When the obstruction recurs frequently, surgical removal of the involved area of the colon becomes necessary. In general, the three-stage procedure with an initial proximal diverting colostomy is indicated.

In a relatively small group of patients who undergo surgery in an interval between attacks, it may be feasible to perform a one-stage resection with end-to-end anastomosis. In these instances a Miller-Abbott tube is used and antibiotics are administered to procure relative intestinal asepsis. Any anastomosis made through diseased bowel is likely to result in leakage and fistula formation; therefore, an adequate resection must remove all of the diseased colon.

Fistula formation

An inflamed diverticulum of the colon readily becomes adherent to adjacent structures and thus a walled-off perforation may occur, resulting in the eventual establishment of a fistula. Vesico-sigmoid fistulae are the most common. Frequently the chief symptoms are urinary and the fistulae are discovered by the urologist. Careful inquiry will usually elicit a history of periods of lower abdominal pain, sometimes severe, followed by symptoms of cystitis and occasionally pneumaturia. The opening of the fistula into the bladder frequently

may be seen on cystoscopic examination; but x-ray barium-enema and proctoscopic examinations are always advisable because of the additional information which they may give.

Recto-vaginal fistulae and abdominal-wall fistulae are less common, but they do occur secondarily to an abscess. Fistulae from one area of the colon to another, around a site of obstruction, are frequently seen. In some patients with chronic diverticulitis many local sinus tracts develop.

Almost without exception, the procedure of choice in this group is a diverting colostomy as an initial step several months prior to resection. This method permits the localized inflammatory process to subside and allows a safer resection.

Diverticulitis versus carcinoma

Although there are many points of difference in the symptoms, signs, and x-ray findings of these two conditions, it is occasionally impossible to distinguish between them. In a few instances the two conditions co-exist. When there is uncertainty, resection must be performed earlier than usual, so as not to temporize with a possible malignant condition.

Hemorrhage

Severe hemorrhage is not a common symptom of diverticulitis. Ransom (7) noted only 1 instance in a group of 53 surgical cases in which hemorrhage was the outstanding clinical manifestation. Melena can occur from co-existing hemorrhoids, carcinoma, or polyps. Bleeding of a relatively severe degree occurred in 1 of our 45 patients.

Recurrent diverticulitis

Several attacks of diverticulitis frequently lead to a stenotic area in the colon, and the chronic inflammatory process becomes irreversible.

These attacks of inflammation and partial obstruction become so frequent that surgical removal of the involved segment of the bowel is mandatory (8, 9). A multiple-stage procedure is usually indicated under these conditions. When there is satisfactory quiescence preoperatively, a one-stage resection may be performed without a complementary colostomy.

SUMMARY

1. The incidence of diverticulitis has increased with the changing age pattern of the population.

2. Conservative medical management is recommended for uncomplicated diverticulitis in geriatric patients.

3. The intestinal obstruction noted in 26 per cent of our patients responded to conservative therapy, including intubation and antibiotics.

4. The complications of diverticulitis which required surgical intervention are discussed and the operative procedures outlined.

5. The procedure recommended for most geriatric patients with surgical complications of diverticulitis is a three-stage resection of the involved segment of colon.

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Abstracts of Current Literature

CARCINOMA OF THE PROSTATE IN THE OCTOGENARIAN.
Baurys, W., and Ziobrowski, F. *Guthrie Clin. Bull.* **23:** 254 (Apr.) 1954.

U. S. Public Health Service statistics show that 25 per cent of deaths due to carcinoma of the prostate during 1950 occurred in men over 80 years of age. Prostatic carcinoma existed in 6.5 per cent of males aged 80 and over admitted to the Clinic during a ten-year period. The operative mortality is five times as great in this age group as in the earlier decades of old age. Acute distress is the only indication for surgery. Preoperative preparation includes the routine studies. Prostatic obstruction is the chief complaint, and generalized arteriosclerosis invariably exists. In order of frequency, decompensation, anemia, and impaired renal function delay operation, as they require preoperative treatment. Transurethral prostatectomy followed by bilateral subcapsular orchidectomy is performed under spinal anesthesia. Postoperatively, patients are urged to become ambulatory after forty-eight hours and estrogen is administered for an indefinite period.

HEMOPOIETIC FACTORS WITH REFERENCE TO AGING, Symposium on Problems of Gerontology, Meeting of National Vitamin Foundation and Johns Hopkins University School of Hygiene and Public Health, New York, N. Y., March 1954.
Bethell, F. H. Abstr. *Internat. Rec. Med. & Gen. Pract. Clin.* **167:** 422 (July) 1954.

Some of the factors influencing hemopoiesis are discussed. Any aspect of nutrition or physiology that is altered with respect to these factors will affect blood regeneration and the maintenance of a normal blood picture. Hemoglobin and erythrocyte counts may decline slightly with advancing years, the decline being greater in males. This tendency may be reversed in postmenopausal females. Although the "cellularity" of bone marrow does not necessarily decrease, adequate blood factor synthesis is not possible under all circumstances in the aged. Adequately treated patients over 60 years of age with pernicious anemia have higher hemoglobin and erythrocyte values than normal persons beyond this age. Evidence is cited that the incidence of pernicious anemia increases with advancing age, as is true of other anemias associated with debilitating disease. Factors related to aging that may contribute to anemia are cumulative dietary deficiency, hypochlorhydria and achlorhydria, diminution in intrinsic factor, intestinal dysfunction, and impaired internal utilization. Both sexes show reduced iron absorption. Gastric hydrochloric acid enhances the absorption of iron and may thus help to prevent anemia. The incidence of achlorhydria in the relatives of pernicious anemia patients increases sharply after the age of 40 years and is significantly higher than in subjects not related to pernicious anemia patients.

ENDOCRINE TREATMENT OF ESSENTIAL HYPERTENSION.
Borgström, S. A. *Acta med. Scandinav.* Suppl. 290, pp. 1–71, 1954.

In 52 long-standing cases of essential hypertension refractory to conservative treatment, a marked decline in the systolic and diastolic blood pressures followed the administration of estrogen, or of estrogen and androgen, combined with calcium. Some of the 14 elderly male and 37 elderly female patients had sustained cerebrovascular accidents, cardiac

lesions, or retinal injuries. Normal blood pressure readings were occasionally obtained in 10 patients and were maintained for one to twelve months *during* treatment in 8 patients. Normal readings persisted for one to eleven months *after* treatment in 24 patients, and for one to two and a half years in 8 patients. Although greatly reduced, the blood pressure (170/100) did not become normal in 2 patients. Cases of renal hypertension responded only slightly for a brief period. Injection therapy with 0.8 mg. of dienestrol combined with 5 ml. of a 10 per cent aqueous solution of calcium gluconate in the same syringe was replaced in 1952 by intramuscular injection every fourteenth day of 6 mg. of diethylstilbestrol dimethyl ether combined with 10 mg. of testosterone propionate and 5 cc. of calcium gluconate. After an adequate reduction, blood pressures were held within normal limits by the administration of a tablet containing 0.004 mg. of ethinyl estradiol with 4 mg. of methyltestosterone, or one containing 0.01 mg. of ethinyl estradiol with 3 mg. of methyltestosterone. Simultaneously the patients received vitamins A, B, C and D and moderate doses of sedatives. No uterine bleeding or prostatic enlargement was noted.

SPECIAL PROBLEMS OF ACUTE APPENDICITIS IN MIDDLE AND LATE LIFE.
Boyce, F. F. *A.M.A. Arch. Surg.* **68:** 296 (Mar.) 1954.

Mortality in acute appendicitis is almost entirely concentrated in advanced disease. Most of the deaths occur in persons over 39 years of age. The pathologic process is rapid and the prognosis serious in elderly persons. The disease is atypical in a large proportion of these patients and its manifestations are frequently so deceptively mild as not to suggest the diagnosis. A survey of 7,613 surgical cases over a twenty-year period showed that elderly patients with their sluggish systemic response had little more than vague gastric distress, pain over the entire abdomen, frequent nausea, fever of a lower range than in younger persons, and a pulse rate no higher than 90. Physical findings were few and the diagnosis could be confused by overindulgence in alcohol, dietary indiscretions, and the presence of another organic disease. A new set of diagnostic standards for middle and late life seems to be required. By bearing acute appendicitis in mind when an elderly patient is encountered who has acute or chronic complaints associated with the digestive process or abdominal pain, and not being misled by the mildness of the complaints, the morbidity and mortality from the disease at this period of life may be reduced. Appendectomy should be prompt in every patient in whom surgery would not prove fatal. Diminished physical reserves make prompt diagnosis and management imperative.

THE CHOICE OF THE ANESTHETIC SEQUENCE FOR THE GERIATRIC PATIENT.
Brehm, W. F. *Guthrie Clin. Bull.* **23:** 245 (Apr.) 1954.

Anesthesia should be planned to produce only minimal changes in the physiologic condition and with recognition that the elderly individual has used up much of the compensating reserves of the circulatory, respiratory, hepatic, and renal systems. The use of balanced anesthesia with small doses of several agents is often successful in the geriatric patient with malfunction of one or more of these systems. Premedication for sedation and reduction of reflex activity and secretions should avoid depression of respiration and alteration of vascular physiology. The amount (small doses are best) and type of anesthesia will depend upon the agent and method chosen. A narcotic is omitted when a depressant like Pentothal or cyclopropane is used. Demerol with atropine has proved satisfactory. Morphine and scopolamine seldom are used in patients past the age of 65 years. The use of nitrous oxide or ethylene induction followed by ether, or ether induction and maintenance, requires a slight increase in premedication, as does the use of regional anesthesia. For surgical procedures not requiring marked muscular relaxation,Pentothal Sodium combined with ethylene or nitrous oxide-oxygen inhalation proves satisfactory. For abdominal operations, muscle relaxants may be combined with Pentothal-gas oxygen. Ether alone has lost favor; however, small amounts of ether added to cyclopropane anesthesia often

eliminate arrythmia. Regional anesthesia should be all, or part of every anesthetic procedure in the geriatric patient; spinal anesthesia is the most useful. The use of small doses of anesthetics guards against hypotension; vasopressor drugs are indicated when hypotension does occur. Blood should be replaced simultaneously with its loss. Supportive treatment must include maintenance of electrolyte balances. Deliberately produced hypotension to reduce blood loss has not yet been proved safe for the geriatric patient.

ANALEPTIC ACTION OF ORAL METRAZOL IN GERIATRIC PRACTICE. A PRELIMINARY REPORT.

Callan, J. R., and Starnes, W. L. *Dis. Nerv. System* **15:** 121 (Apr.) 1954.

The simplest method for improving the condition of geriatric patients is stimulation of the faculties which remain. Metrazol, an analeptic, acts principally on the medullary centers when they are depressed, but to some extent stimulates the entire cerebrospinal axis. Its stimulation of the respiratory center helps to overcome anoxia and raise cerebral metabolism, and its general tonic effect on skeletal muscle and nerve impulse transmission may alert the patient, unless irreversible changes are present in the brain. Its effects were tested over a ninety-day period in 39 senile males at the San Antonio State Hospital. Signs of cerebral arteriosclerosis were present in 35, senile mental changes in 4, progressive lenticular degeneration in 1, and psychoneurosis in 1. The dosage of Metrazol varied from one to three 1½-grain tablets four times daily, increments being initiated when improvement became static or failed to occur. Eleven patients improved markedly, with varying degrees of increased alertness, interest in surroundings, and restoration of interest in neat personal appearance, family affairs, and activities outside the hospital. Nineteen patients showed moderate improvement and 9 did not improve. Metrazol is now administered routinely in increasing dosages, up to the maximum used in the test, to all new patients following a week's adjustment period. In the absence of response after thirty days, the drug is discontinued, as there is little chance of improvement.

FAT METABOLISM WITH PARTICULAR REFERENCE TO PROBLEMS OF AGING, Symposium on Problems of Gerontology, Meeting of National Vitamin Foundation and Johns Hopkins University School of Hygiene and Public Health, New York, N. Y., March 1954.

Deuel, H. J. Abstr. *Internat. Rec. Med. & Gen. Pract. Clin.* **167:** 426 (July) 1954.

Various studies on fat metabolism are cited. The fat deposits of the body gradually increase as age advances. The water content varies inversely with the fat content, and so decreases with age. Blood lipid changes show a less definite pattern. Blood cholesterol concentration has been shown by Keys to increase progressively. There appears to be no similar consistent change in the concentration of blood lipids, particularly the phospholipids. In general the chylomicron count is elevated in older age, presumably because of a decreased ability to emulsify fat. This change may be related to decreased pancreatic function. Studies in the rat indicate that there may be an increased requirement for essential fatty acid in old age.

MAJOR GYNECOLOGICAL SURGERY IN THE AGED PATIENT.

Douglas, G. W., and Studdiford, W. E., Jr. *Am. J. Obst. & Gynec.* **68:** 456 (July) 1954.

Results of 139 major gynecologic surgical procedures in 131 patients over 65 years of age are presented. Forty-seven abdominal and 92 vaginal operations are included, with an over-all mortality of 6.5 per cent. A variety of anesthetics was employed, with serious

difficulty in 2 cases. There were few postoperative complications, although no special measures in postoperative care were taken. Most of the postoperative deaths occurred in patients with malignant disease, and the mortality was high in patients over 80. Vaginal and abdominal surgery may be carried out in elderly gynecological patients with a minimum of risk and postoperative complication, provided care is exercised in medical evaluation, anesthesia, and operative technique. Conservatism is urged in patients of extreme age, and in consideration of radical surgery in the aged patient. (Authors' conclusions.)

A CASE OF GRAVE HYPERTENSION TREATED ACCORDING TO DR. S. A. BORGSTRÖM'S ENDOCRINOLOGICAL METHOD. PRELIMINARY REPORT.

Ekehorn, G. *Acta med. Scandinav.* Suppl. 289, pp. 1–50, 1954.

A combination of estrogen with androgen administered with calcium reduced blood pressure from hypertensive levels to nearly normal in a physician who reports his own case. A poor response had previously been obtained with an antihypertensive regimen, sedatives, and sympathicolytic agents. The blood pressure was reduced from the beginning of treatment, which was commenced with estrogen alone and calcium; a blood pressure near the normal level was attained after a few months and has persisted for more than a year, except for transient elevations caused by mental and emotional stress. Small doses of papaverine between injections reduced peaks in blood pressure. The interval between injections was shortened from a week to five days, when the patient became more dependent upon papaverine on the fourth to sixth postinjection day. The interval was later lengthened but hormone injections could not be suspended for more than ten to twelve days. Similar results were obtained when androgen was substituted for estrogen, but androgen was believed to be less effective as an antihypertensive agent. The reduction in blood pressure could be maintained when tablet preparations for buccal absorption replaced the original injection therapy. The daily dosage was two tablets containing 0.004 mg. of ethinyl estradiol and 4.0 mg. of methyltestosterone and one tablet containing 0.01 mg. of ethinyl estradiol and 3.0 mg. of methyltestosterone, or three of the former strength. The combined hormones were supplemented by calcium orally and later by weekly injections of calcium and 30 mg. of testosterone propionate. During this regimen, morning pressures were 105–125/70–75, bedtime pressures 5 to 10 mm. higher, and daytime pressures 130–140/80–85.

SOME OBSERVATIONS ON BLOOD AND URINE VITAMIN LEVELS IN THE AGED, Symposium on Problems of Gerontology, Meeting of National Vitamin Foundation and Johns Hopkins University School of Hygiene and Public Health, New York, N. Y., March 1954.

Kirk, J. E. Abstr. *Internat. Rec. Med. & Gen. Pract. Clin.* **167:** 427 (July) 1954.

Observations on the blood and urine vitamin levels in the aged are reported, on the basis of surveys of the general population and of institutionalized patients under controlled conditions. In the population surveys, the serum levels of carotene and vitamin A were approximately equal in young and old subjects. Blood ascorbic acid concentration, especially when the diet contains a suboptimal amount of the vitamin, may decline with advancing age. Serum riboflavin and urinary panthothenic acid are not significantly changed. Institutional studies showed that the mean levels of vitamin A and of vitamin B_1 were within the normal range, whereas the level of blood ascorbic acid was decreased. In several elderly subjects with subnormal concentrations of vitamin B_1, 5 mg. daily in tablet form raised the blood values of B_1 to normal, but two thirds of the administered dose appeared in the feces. In evaluating vitamin nutrition with respect to utilization of administered doses in aged individuals, each vitamin must be considered separately, because of variations in absorption and destruction of vitamins in the gastrointestinal tract. Among factors

involved in losses of vitamins in elderly individuals, modifications with age in the intestinal flora may be of particular importance.

SOME REMARKS ON THE EFFECT OF AGE IN THE CLINICAL COURSE OF CANCER.
Klopp, C. T. *J. Am. Med. Women's A.* **9:** 109 (Apr.) 1954.

Because of the widespread impression that the clinical course of cancer is more rapid in the young patient than in the old, data on clinical behavior with respect to age were gathered. No direct or conclusive evidence was apparent of an effect of age on the clinical course of cancer as measured by response to a therapeutic agent, by a suggestive correlation between endocrine metabolism and clinical behavior, or by prognosis. Prognosis was poorer in carcinoma of the rectum, stomach, and prostate in younger individuals, possibly due to delay in diagnosis. For the same reason, the prognosis was poorer in older individuals with seminoma of the testicle.

CONSERVATIVE MANAGEMENT OF DIABETIC FOOT COMPLICATIONS.
Lowrie, W. L.; Redfern, W. E., and Brush, B. E. *Henry Ford Hosp. M. Bull.* **2:** 79 (June) 1954.

Diabetic complications of the foot may respond to conservative management, although major amputations were once considered necessary. Clinical examination furnishes important information concerning the circulation of an affected foot but a trial of conservative therapy gives the best evaluation. Diabetic gangrene limited to the digits may be managed by strict diabetic control, attention to general health, protection against injury, the use of antibiotics for infection, the use of vasodilators and anticoagulants, and consideration of sympathectomy when vasospasm is marked. Gangrene that progresses into the foot and produces local and systemic symptoms must be handled surgically. Conservative surgical principles include adequate incisions and the use of antibiotics for infection, a trial of conservative management, careful debridement, and local amputation with careful plastic repair. Consideration for the low vitality of the tissues and the avoidance of tourniquets, clamps, and tight dressings are essential.

SUI VANTAGGI DERIVANTI DALLO SFRUTTAMENTO DEI SINERGISMI ORMO-VITAMINICI (ADVANTAGES DERIVED FROM THE USE OF SYNERGISTIC HORMONE-VITAMINS).
Matteini, M. *Minerva med.* **45:** 1066 (Apr. 18) 1954.

Testosterone propionate 5 mg., desoxycorticosterone 2.5 mg., and multivitamins combined in a tablet administered once daily for a total of ten to twenty tablets had a profound protein anabolic effect in young patients with retarded body growth and sexual development. Improvement in the general physical condition and mental state occurred in climacteric and senile patients.

GASTROINTESTINAL DISEASE IN OLD AGE.
Oliver, T. H. *Practitioner* **172:** 151 (Feb.) 1954.

The sources of gastrointestinal disturbance in the elderly are divided into: 1) acute or chronic organic disease, 2) loss of function due to deterioration of glandular secretion and atrophy of visceral and abdominal muscles, and 3) loss of function from psychologic causes. Because reactions are less intense in old age, acute diseases such as perforated duodenal ulcer, acute appendicitis, mesenteric thrombosis, and volvulus may be difficult to diagnose. Organic causes of chronic disturbances may be located in the gastrointestinal tract itself, as in the case of a growth, peptic ulcer, or diverticulitis; or they may be in some other system, as in the heart and cardiovascular system. Chronic uremia, pernicious anemia, and pulmonary tuberculosis may be associated with varying degrees of gastrointestinal

disturbance. Losses of function include atrophy of mucous membranes, diminution in gastric acid and pepsin, failure of salivation, lack of intestinal secretion, diminished peristalsis, loss of power of abdominal muscles, and loss of nervous sensitivity, as of the rectum in chronic constipation. Psychologic causes as the result of worry, loneliness, or discontent may account for many gastrointestinal disturbances. Radical alteration in eating habits in the elderly is unwise. Restriction of quantity, avoidance of indigestible foods, and in some instances limitation of carbohydrate are advisable. In cases of excessive alcohol consumption, reduction rather than elimination is indicated. Exercise, interests, and nonstrenuous activities should be encouraged.

THE SKIN IN OLD AGE.

Percival, G. H. *Practitioner* **172:** 510 (May) 1954.

Changes in the skin with age and senile elastosis are described. Subtle changes are manifest by the cutaneous susceptibility to certain diseases, the variability in their course, and their effect on the general health. Pyogenic infection rarely occurs in senile skin; an associated systemic condition is likely when boils recur. Herpes zoster may lead to persistent debility. Among allergic manifestations, urticaria, although rare, tends to be intractable and due to factors associated with deceleration of metabolism and function. Senile pruritus may occur in the lean and emaciated. General measures to improve digestion and elimination and to overcome pruritus are suggested for both urticaria and pruritus. The frequent eczemas are caused by a contact substance, trauma, or infection. Protection and local medication produce the maximum response. Diffuse neurodermatitis, in which a systemic or developmental factor may operate, seldom occurs in the elderly. However, generalization of an eczemal reaction from localized patches is not unlikely. Prolonged contact and infective eczemas tend to produce lichenification. Psoriasis prevails in old age but lupus erythematosus is rare. After the age of 50, dermatitis herpetiformis carries a 40 to 50 per cent mortality rate. Pemphigus foliaceus and pemphigus vegetans increase in severity. ACTH suppresses the lesions of all three of these diseases. Dermatitis herpetiformis may respond to inorganic arsenic or the sulfonamides, and pemphigus vulgaris to Aureomycin. Primary atrophy of the skin, rare at any time, occurs usually in old age. The lesions of hypertrophy of the stratum corneum form small warty keratomas. Exposure to the sun and some local factor are operative in this condition. The lesions should be destroyed as they are the precursors of squamous-cell carcinoma. The whole epidermis hypertrophies when there is a seborrheic or senile wart. These warts may be nevoid in character and develop under the influence of alterations in activity of the endocrine glands. Basal-cell carcinoma develops on normal skin with no premalignant change. Cutaneous carcinoma in the early stages is seen as small, pearly, cutaneous elevations. Both types of carcinoma respond to x-ray therapy. Knowledge of the cell type is important in prognosis, as the primary lesion of a squamous-cell carcinoma may heal but there may be secondary involvement with delayed clinical signs.

MYOCARDIAL INFARCTION AND TESTOSTERONE PROPIONATE.

Schwartzman, A. *M. Times* **82:** 345 (May) 1954.

Attention is drawn to the need for caution in the use of testosterone in individuals with signs of involvement of the cardiovascular system, and particularly of the coronary circulation. A 50-year-old male treated for impotence with testosterone continued the medication beyond the time prescribed, and subsequently a myocardial infarction developed. The erythrocyte count was found to have risen from 4.8 million to 6.2 million per cu. mm. and the hemoglobin from 14.1 to 17.1 Gm. per cent. Each value became approximately normal within two and a half months after discontinuation of medication. This case reinforces the observation that male sex hormone may be etiologically related to the development of coronary atheromatosis. Up to the age of 40 this condition occurs in a ratio of 10–24:1 in

favor of males, decreasing with age to a ratio of 1:1 after the age of 60. Testosterone in the case reported, aside from a possible effect on lipoprotein metabolism, influenced hemopoiesis. This led to increased erythrocytes and blood viscosity, and thereby may have favored an existing tendency to coronary thrombosis and infarction.

PEPTIC ULCER IN THE AGED.

Shallenberger, P. L., and Perry, H. M. *Guthrie Clin. Bull.* **23:** 241 (Apr.) 1954.

The incidence of peptic ulcer in persons past the age of 60 years is variously reported as between 10.5 and 22.9 per cent; approximately 44.2 per cent of the deaths occur in this age group. A series of 143 cases of peptic ulcer in persons over 60 is reviewed as to incidence, symptoms, treatment, complications, and mortality. Therapy for uncomplicated peptic ulcer in old age is conservative. When an elderly patient in good physical condition has had numerous recurrences and some of the classic complications (hemorrhage and then stenosis were the most frequent in the series reviewed), treatment should be surgical. Subtotal gastrectomy is the preferred procedure.

THE PRESENT STATUS OF PHYSIOLOGICAL AND BIOCHEMICAL STUDIES OF AGING, Symposium on Problems of Gerontology, Meeting of National Vitamin Foundation and Johns Hopkins University School of Hygiene and Public Health, New York, N. Y., March 1954.

Shock, N. W. Abstr. *Internat. Rec. Med. & Gen. Pract. Clin.* **167:** 425 (July) 1954.

Aging is defined as changes taking place in an organism with time, particularly those seen after cessation of growth. Considering why a cell loses its ability to maintain its integrity, emphasis is placed on the functional changes that occur with time and are unrelated to degenerative and other diseases. In attempts to answer the question whether aging is a pathologic process or a biologic phenomenon, experiments are cited in which little difference in vitamin A absorption and in elevation of plasma vitamin A and carotene levels was found between aged and young individuals. The renal plasma flow falls significantly in the elderly. General function and the number of active kidney nephrons are diminished. Antidiuretic hormone terminates water diuresis more effectively in the young. This may be due to a change in cellular metabolism with age. Whereas classic information indicates a downward trend in the basal metabolism, evaluated on the basis of the body water content, there is no indication of a change in oxygen consumption in the aged.

PHYSICAL MEDICINE FOR THE AGED AND CHRONICALLY ILL.

Silverstein, H. *Canad. M. A. J.* **70:** 31 (Jan.) 1954.

As specific measures for curing chronic diseases or preventing the process of natural aging are lacking, physical therapeutic measures and rehabilitation have much to offer the aged and chronically ill. Physical medicine is aimed at restoring a maximum degree of personal care and independence. The measures stressed are thermotherapy, hydrotherapy and mechanotherapy, which includes remedial exercises, massage, electrotherapy and occupational therapy. They all are applicable to conditions most commonly encountered in the aged: rheumatism, arthritis, strains, sprains, backache, stiff shoulder, fractures, and peripheral vascular lesions. Rehabilitation in hemiplegia has been neglected. Recognition of the changes associated with aging—tissue desiccation, retardation of cell division, atrophy, degeneration of the cardiovascular and central nervous systems, impaired senses, mental changes and slowing of musculo-skeletal reactions—is essential to successful treatment.

ABDOMINAL SURGERY IN THE ELDERLY PATIENT. REVIEW OF 106 SELECTED CASES OF BILIARY TRACT, STOMACH, AND BOWEL LESIONS.

Zeifer, H., and Colp, R. *A.M.A. Arch. Surg.* **68:** 315 (Mar.) 1954.

Geriatric surgery acquires increasing importance as the elderly population enlarges. An outline of the pathology, treatment, and preoperative and postoperative care of 106 selected patients 70 years of age and older is presented. The operations were performed on the biliary tract in 25 patients, the colon in 49 patients, and the stomach in 32 patients. Besides a discussion of the correction of deficiencies and of fluid and electrolyte disturbances preoperatively, the measures necessary under specific conditions are indicated, *e.g.*, evacuation of the stomach in patients with stenosis at the pyloroduodenal junction and attention to hypochloremia, hypopotassemia, alkalosis and dehydration due to vomiting. Spinal anesthesia was used without complications in 47 of the patients, general anesthesia in 58, and local anesthesia in 6. Abdominal and respiratory infections constitute the major hazards in abdominal surgery. Their incidence was reduced in the latter portion of this study by proper management of fluid balance, early ambulation, and the use of antibiotics. The administration of 1,500 to 2,000 cc. of 5 per cent dextrose in distilled water during the first twenty-four hours postoperatively is sufficient in most elderly patients to cover fluid loss and assure adequate urinary output. The mortality rate was 14.2 per cent for the entire group. Operations on the biliary tract and stomach were well tolerated. A high mortality rate in operations on the colon was reduced in the latter half of the study. It is concluded that old age does not contraindicate surgical intervention. The sex of the patient, the type of anesthesia, the presence of hypertension or previous congestive heart failure, and technical considerations are not factors in the mortality rate. The disease itself, the character of the surgical procedure, and the presence of obesity are significant mortality factors.

1955 ANNUAL MEETING

AMERICAN GERIATRICS SOCIETY

Hotel Roosevelt, New York City
April 21 and 22, 1955

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1955 ANNUAL MEETING

AMERICAN GERIATRICS SOCIETY PROGRAM

HOTEL ROOSEVELT, NEW YORK CITY

Thursday, April 21 and Friday, April 22, 1955

MORNING SESSION—THURSDAY, APRIL 21

Norris J. Heckel, M.D., presiding

8:00 REGISTRATION

9:00 DERMATOLOGIC PROBLEMS IN THE AGED
Morris Leider, M.D., New York, N. Y.

9:15 PROBLEMS PECULIAR TO SURGERY IN THE AGED—AN ANALYSIS OF OVER 300 SURGICAL OPERATIONS
Arkell M. Vaughn, M.D., Chicago, Illinois

9:30 DIAGNOSIS AND THERAPY OF MIGRAINE
Harold W. Lovell, M.D., New York, N. Y.

9:45 RESULTS OF TREATMENT OF FRACTURES OF THE NECK OF THE FEMUR IN THE AGED
M. S. Goldstein, M.D., C. L. Beye, M.D., M. Bonfiglio, M.D. and S. E. Ziffren, M.D., Iowa City, Iowa

10:00–10:20 Question Period

10:20–10:30 Recess for Refreshments

Edward Henderson, M.D., presiding

10:30 MANAGEMENT OF BLADDER DYSFUNCTIONS IN THE PARAPLEGIC PATIENT
John Kingsley Lattimer, M.D., New York, N. Y.

10:45 RECENT DEVELOPMENTS IN THE THERAPY OF CHRONIC RESPIRATORY DISEASES
Carl Muschenheim, M.D., New York, N. Y.

Question Period—*Malford W. Thewlis, M.D.*, presiding

11:00–12:45 **PANEL ON DIABETES IN THE AGED**

Moderator:
Laurance W. Kinsell, M.D., Oakland, California

Collaborators:
Howard Root, M.D., Boston, Mass.
Thomas H. McGavack, M.D., New York, N. Y.
Irving Graef, M.D., New York, N. Y.
Herbert Pollack, M.D., New York, N. Y.
Beverly C. Smith, M.D., New York, N. Y.
Edward Tolstoi, M.D., New York, N. Y.

12:45 LUNCHEON

AFTERNOON SESSION—THURSDAY, APRIL 21

Richard J. Kraemer, M.D., presiding

1:45 CAUSES AND MANAGEMENT OF POSTMENOPAUSAL UTERINE BLEEDING
J. Donald Woodruff, M.D., Baltimore, Maryland

2:00 PELVIC FINDINGS IN WOMEN AFTER 65
Dean Farley, M.D., and John R. Wolff, M.D., Chicago, Illinois

2:15 CORRELATION OF X-RAY DIFFRACTION AND METAL CONTENT OF AGING AORTA
Hans H. Zinsser, M.D., Los Angeles, California

2:30 TUBE FEEDING IN ELDERLY PATIENTS
James Barron, M.D. and L. S. Fallis, M.D., Detroit, Michigan

2:45 MANAGEMENT OF ANESTHESIA IN THE OLDER AGE GROUP
John E. Osborn, M.D., Rochester, Minnesota

3:00–3:20 Question Period

3:20–3:30 Recess for Refreshments

Edward B. Allen, M.D., presiding

3:30–5:30 **PANEL ON CARDIAC AND CIRCULATORY DISEASES**

Moderator:
C. T. Stone, M.D., Galveston, Texas

Collaborators:
George Griffith, M.D., Los Angeles, California
Hugh Montgomery, Philadelphia, Pa.
Oglesby Paul, Chicago, Ill.
Gerald H. Pratt, New York, N. Y.

5:30 **Business Meeting**—Limited to members only.

MORNING SESSION—FRIDAY, APRIL 22

Hollis E. Clow, M.D., presiding

8:00 REGISTRATION

9:00 DIAGNOSIS AND TREATMENT OF CHRONIC GLAUCOMA
William F. Hughes, Jr., M.D., Chicago, Illinois

9:15 THE DILEMMA OF GASTRIC ULCER—BENIGN OR MALIGNANT? A PLAN OF MANAGEMENT FOR GERIATRIC PATIENTS
Brock E. Brush, M.D. and Robert J. Priest, M.D., Detroit, Michigan

9:30 TREATMENT OF INTESTINAL OBSTRUCTION IN THE AGED
Frank Glenn, M.D. and George Wantz, M.D., New York, N. Y.

9:45 CONCERNING THE DIAGNOSIS AND TREATMENT OF SUBDURAL HEMORRHAGE IN THE AGED
Matthew T. Moore, M.D., Philadelphia, Pa.

10:00–10:20 Question Period

10:20–10:30 Recess for Refreshments

Thomas H. McGavack, M.D., presiding

10:30 JAUNDICE IN THE AGED: DIAGNOSTIC AND THERAPEUTIC IMPLICATIONS
Frederick Steigmann, M.D. and V. Godellas, M.D., Chicago, Illinois

10:45 URINARY 17-KETOSTEROID EXCRETION AS INFLUENCED BY AGE AND DISEASE
Thomas H. McGavack and Sidney Pearson

11:00–12:45 **PANEL ON OSTEOPOROSIS**

Moderator:
Ephraim Shorr, M.D., New York, N. Y.

Collaborators:
Daniel Laszlo, M.D., New York, N. Y.
Nathan W. Shock, Ph.D., Baltimore, Md.
G. Donald Whedon, New York, N. Y.
Harry L. Jaffe, New York, N. Y.

12:45–1:45 LUNCHEON

AFTERNOON SESSION—FRIDAY, APRIL 22

Harold G. Wolff, M.D., presiding

1:45 DIAGNOSIS AND TREATMENT OF PAIN IN THE ACROMIO-CLAVICULAR JOINT
Charles V. Heck, M.D., and Fremont A. Chandler, M.D., Chicago, Illinois

2:00 THE PREFERENCE FOR STREPTODUOCIN IN THE TREATMENT OF TUBERCULOSIS OF THE AGING
Harry Shubin, M.D., Philadelphia, Pa.

2:15 ROENTGEN THERAPY IN CHRONIC CHEST SYMPTOMS IN THE ELDERLY
Anthony F. Rossitto, M.D., Wichita, Kansas

2:30 THE TREATMENT PARKINSON'S DISEASE IN THE AGED
Robert S. Schwab, M.D., Boston, Mass.

Laurance W. Kinsell, M.D., presiding

2:45–4:45 **PANEL ON CANCER**

Moderator:
C. P. Rhoads, M.D., New York, N. Y.
Collaborators:
To be announced.

HORMONAL THERAPY IN CANCER
Rulon W. Rawson, M.D., New York, N. Y.
EVALUATION OF ADRENALECTOMY FOR CANCER OF THE PROSTATE AND BREAST
H. T. Randall, M.D., New York, N. Y.
PALLIATIVE THERAPY OF CANCER OF THE LUNG
D. A. Karnofsky, M.D., New York, N. Y.
THE INDICATIONS FOR THE USE OF ISOTOPES IN MALIGNANT DISEASES
J. E. Rall, M.D., New York, N. Y.

PAPERS READ BY TITLE

TURNING BACK THE CLOCK
Simeon C. Allen, M.D., Boston, Mass.
CONGENITAL HEART DISEASE IN THE AGED
Louis F. Bishop, M.D., New York, N. Y.
ARTERIOSCLEROSIS AND MODERN LIVING
Aris Carpousis, M.D., Washington, D. C.
CARCINOMA OF THE BREAST IN THE AGED
T. C. Case, M.D., New York, N. Y.
ADVANTAGES OF AMBULATORY PROCTOLOGY TECHNIQUES IN THE ELDERLY PATIENT
Alfred J. Cantor, M.D., Long Island, N. Y.
EARLY DIAGNOSIS OF CHRONIC DISEASE. USE OF EMISSION SPECTROSCOPE IN DETERMINATION OF TRACE ELEMENTS IN HUMAN BLOOD
Henry Eisfelder, M.D., Roslyn Heights, N. Y.
THE USE OF DIGITALIS IN THE GERIATRIC PATIENT
Samuel Epstein, M.D., Brooklyn, N. Y.
A GERIATRIC CLINIC IN A GENERAL HOSPITAL—FIRST YEAR'S EXPERIENCE
Louis Friedfeld, M.D., New York, N. Y.
NEWER ASPECTS AND TECHNIQUES IN GERIATRIC PSYCHIATRY
Hal W. Geyer, M.D., Milford, Delaware
ATTITUDE THERAPY FOR NON-INSTITUTIONALIZED ELDERLY PSYCHOTICS
Ralph Ginzberg, M.D., Tomah, Wisconsin
SERUM BETA-LIPOPROTEIN IN THE AGED: METABOLIC CORRELATION
Leo Gitman, M.D., Brooklyn, N. Y.

Shock Therapy for the Aged (Indications, Procedure and Results)
Hirsch Loeb Gordon, M.D., New York, N. Y.

The Use of Desoxycorticosterone Acetate in the Treatment of Gastric and Duodenal Ulcers
George Joyce Hall, M.D., Sacramento, Calif.

Medical Care in the Old Age Assistance Program
William Hammond, M.D., Scarsdale, N. Y.

Arrhythmias of the Aged
Raymond Harris, M.D., Albany, N. Y.

Hernia in the Aged
A. H. Iason, M.D., Brooklyn, N. Y.

Gallbladder Surgery in the Aged
C. R. Jablonoski, M.D., Cleveland, Ohio

Effort, Stress, and Coronary Heart Disease
Edmund Jacobson, M.D., Chicago, Illinois

Salient Factors in Brief Psychotherapy with Patients in Later Life
Hans J. Kleinschmidt, M.D., New York, N. Y.

Cure of Blindness in the Older Age Group
Arthur Alexander Knapp, M.D., New York, N. Y.

The Meaning and Importance of Potassium in Plasma Determination during the Four-hour Glucose Tolerance Test in Visceroptosis with Functional Hyperinsulinism
H. Layzer, M.D., Cleveland, Ohio

Reappraisal of Today's Nutrition
W. Coda Martin, M.D., New York, N. Y.

Psychotherapy Needed in Senescent Married Couples (Case Reports and Theoretical Survey)
Joseph Meiers, M.D., New York, N. Y.

The Use of a Carbonic Anhydrase Inhibitor in the Treatment of Hyperkaliemia
Vince Moseley, M.D., Charleston, S. C.

Use of Hyaluronidase in Peyronie's Disease
C. L. Mulinger, M.D., Los Angeles, Calif.

Management of Cataract
Brittain Ford Payne, M.D., New York, N. Y.

The Use of Intracutaneous and Depot Histamine in the Treatment of Osteoarthritis and Fibrositis
Irving B. Perlstein, M.D., Louisville, Ky.

Senile Macular Degeneration of the Eyes—With Case Reports
Louis F. Raymond, M.D., East Orange, N. J.

Neuro-Geriatrics; Organic and Philosophical Concepts
Karl Rothschild, M.D., New Brunswick, N. J.

1. The Significance of Long-standing Hernia to the Geriatric Patient. 2. Occlusive Arterial Gangrene in the Older Patient
Martin E. Silverstein, M.D., New York, N. Y.

Premature Vascular Degeneration in Diabetes Mellitus—Pathogenesis, and Relation to Aging
Chester Solez, M.D., Narragansett, R. I.

The Role of the Social Worker in Rehabilitation in an Institution for the Chronically Ill
Mrs. Helen K. Weil, Cleveland Heights, Ohio

ANNUAL MEETING OF THE TEXAS GERIATRIC SOCIETY

There will be a business session in the afternoon of January 8, 1955 at the Baker Hotel, Dallas, Texas. On January 9 the annual scientific session will be held at the Parkland Hospital, Dallas. A number of distinguished physicians will speak at the meeting. Doctor Hejtmancik of the University of Texas School of Medicine, Galveston, will speak on "Refractory Congestive Heart Failure." Doctor Wolff of the University of Oklahoma School of Medicine will speak on an appropriate subject yet to be chosen. Speakers from Baylor University College of Medicine and the Southwestern Medical School of the University of Texas, Dallas, will also be on the program.

HENRY H. NIEHUSS, M.D., President
Texas Geriatric Society

BOUND COPY OF BULLETIN ON RHEUMATIC DISEASES AVAILABLE TO PHYSICIANS

The first four volumes of The Bulletin on Rheumatic Diseases have been bound in soft cover and are now available to physicians.

The Bulletin, published by the Arthritis and Rheumatism Foundation, is issued nine times a year and is available without charge to all physicians and medical students who request it.

Physicians wishing to receive The Bulletin on Rheumatic Diseases regularly at no cost, should write to Dr. Russell L. Cecil, Medical Director, Arthritis and Rheumatism Foundation, 23 West 45th Street, New York 36, N. Y.

The bound special volume composed of all issues of The Bulletin for the past four years, is available from the Arthritis Foundation at the cost of $1.

The Bulletin, the only American publication in the field of the rheumatic diseases, was started in 1950 to foster greater interest in the rheumatic diseases among physicians. Its aim is to keep doctors abreast of the more important clinical advances and changing concepts of the rheumatic diseases promptly, simply and succinctly.

The Bulletin at present is being distributed to 22,500 physicians throughout the United States and 25 foreign countries.

THE MICHIGAN STATE MEDICAL SOCIETY

and the

UNIVERSITY OF MICHIGAN

announce a course for physicians entitled

GERONTOLOGY

MEDICINE'S RESPONSIBILITY TO OLDER PEOPLE.

The course will be held in Ann Arbor, Michigan, at the Rackham Building, January 13–15, 1955. Its objectives are:

1) to outline medicine's responsibility to older people,
2) to review current medical knowledge in gerontology, and
3) to acquaint the practitioner with community projects in gerontology and to define his role in these efforts.

Faculty for the course has been drawn from among national leaders in the various phases of gerontology and geriatric medicine to be considered. Enrollment is open to any interested physician. Following the conference the manuscripts will be published in book form and distributed at $2 a volume.

For further information write to the

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